Rancho Guejito Wine Tasting Facility and Event Center

VMT Analysis Memorandum

County of San Diego, California

November 18, 2020

Revised: January 28, 2021

Prepared by RICK Community Planning

RICK ENGINEERING COMPANY

Brian F Mooney FAICP, Principal

Katherine Duncan, Environmental Planner

Table of Contents

List of Exhibits

1.0 Introduction

RICK Community Planning (RICK) conducted a review of technical advisory documents relating to the implementation of Senate Bill 743 and the use of Vehicle Miles Traveled (VMT) to evaluate and compile this qualitative VMT Memorandum for the County of San Diego on the proposed Rancho Guejito Wine Tasting Facility and Event Center (Proposed Project). The Proposed Project includes a wine tasting facility and special events center for the existing Rancho Guejito vineyard located on the north side of State Route (SR) 78 (San Pasqual Valley Road), between Ysabel Creek Road and Bandy Canyon Road.

The purpose of this memorandum is to qualitatively evaluate VMT impacts of the Proposed Project consistent with Senate Bill 743, CEQA Guidelines Section 15064.3, and the County of San Diego 2020 Transportation Study Guidelines. Under the County of San Diego Transportation Study Guidelines and CEQA Guidelines Section 15064.3(b)(4), the lead agency has discretion to choose the most appropriate methodology and can use its professional judgment based on substantial evidence to adjust its analysis accordingly. Based on the findings described in this memo the Proposed Project would have a less than significant impact related to VMT.

2.0 Project Description

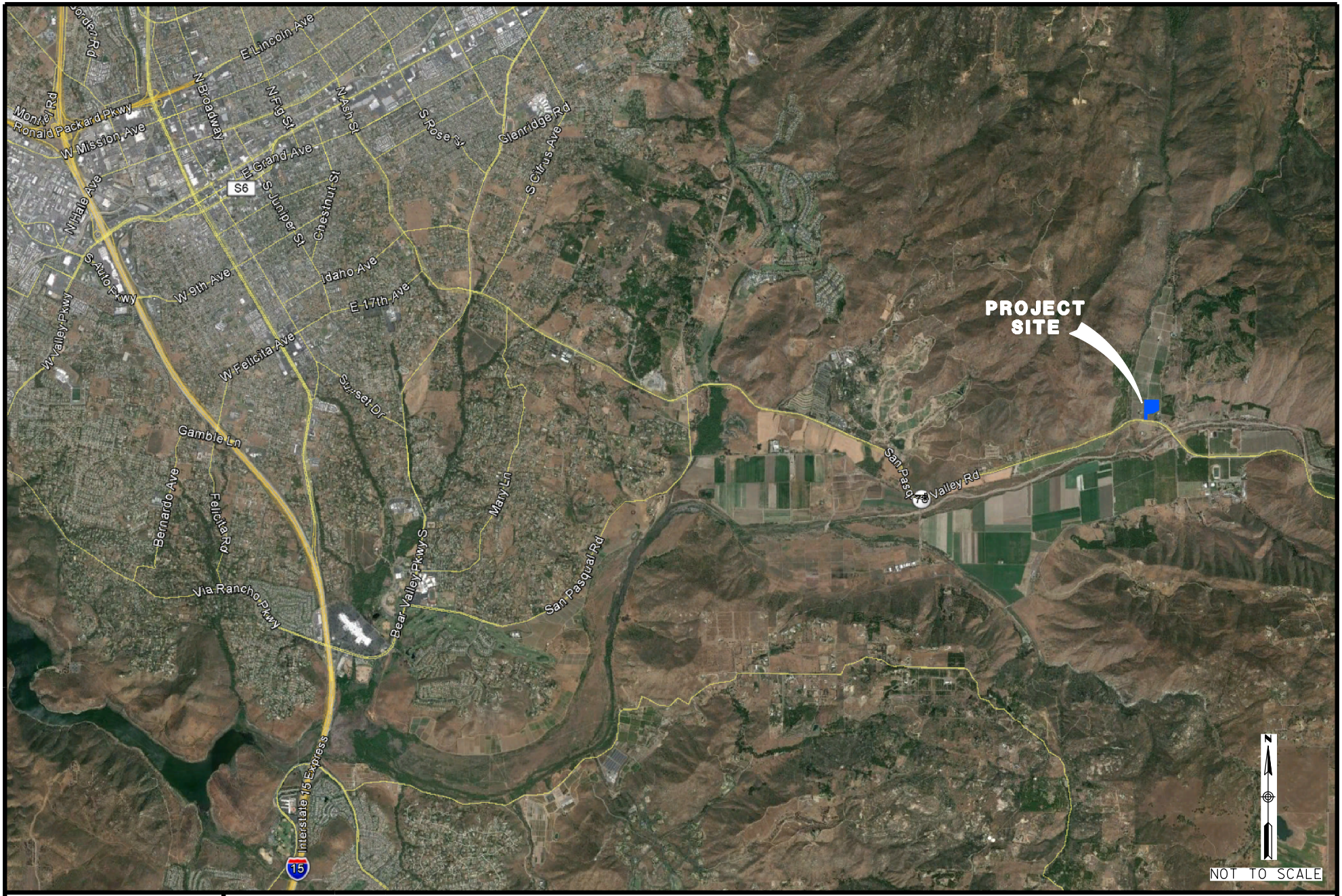
The Proposed Project involves the construction of a wine tasting facility complete with a commercial kitchen and an event center at an existing winery. The proposed tasting facility would consist of a single-story building with a design inspired by the haciendas of the Mexican period in San Diego County. The Proposed Project is expected to operate seven days a week and is anticipated to be constructed in phases, with the tasting room opening in year 2023, the event center (including the bridal suite and banquet barn) in year 2026, and the tasting room expansion in year 2027.

The Proposed Project is located at 17224 San Pasqual Valley Road, in the North County Metro Subregional Plan area, within unincorporated San Diego County. The property is located on the north side of State Route (SR) 78 (San Pasqual Valley Road), between Ysabel Creek Road and Bandy Canyon Road at Caltrans post mile 26.906, see Exhibit 1 below for more details. The SR-78 section within the project area currently operates as a two-lane (one lane each direction), undivided road. Additionally, there is a 1-foot shoulder on the north side of the road and an 8-foot shoulder on the south side.

Currently, there are 3 gated driveways that provide access to the project site. The westernmost driveway (Driveway #1) is currently fenced off and it is not operational. The central driveway (Rockwood Grove/Driveway #2) is a gated access which serves as the primary access to the main agricultural activities within Rockwood Canyon, and will be the main access point for the proposed project and its guests. It should be noted that this gate will be open during operational hours. The easternmost driveway (Driveway #3) is gated and serves as access to an existing farmhouse and wine tasting area previously permitted (that will remain in operation). For the purposes of this memorandum, all wine tasting facility and event center traffic will be accounted for at the central driveway (Driveway #2), and existing site traffic is assumed to operate at their respective driveways. See Exhibit 2 for more details.

The tasting facility is planned to be set in the middle of existing groves and vineyards with parking, outdoor patio, entry fountain, and associated hardscape and landscaping. Existing uses of the property include three existing single-family dwellings, agricultural buildings, storage buildings, carports, orchards, and vineyards. Properties surrounding the Project are characterized by agriculture, including additional vineyards separately owned and operated, and scattered single family homes. The proposed tasting area is located approximately 790 feet from the nearest residence which is located south of SR-78. The Proposed Project plans maintain the existing agricultural, rural character of the area.

The tasting room facility would be approximately 4,283 square feet which includes the commercial kitchen, wine bar and seating areas for tasting, offices, restrooms, merchandise display areas, wine storage and refrigerated and non-refrigerated food storage areas. The proposed commercial kitchen would serve food to wine tasting patrons or provide food for the event center. The Project also includes an outdoor covered patio and lawn areas for tasting and private events. The special events area is expected to cover approximately 1,519 square feet, and includes a separate 3,700 square feet banquet barn. The Proposed Project also includes 1,612 square feet reserve space for future expansion to the north of the tasting room. The overall anticipated buildout with the reserve space would be 11,114 square feet.

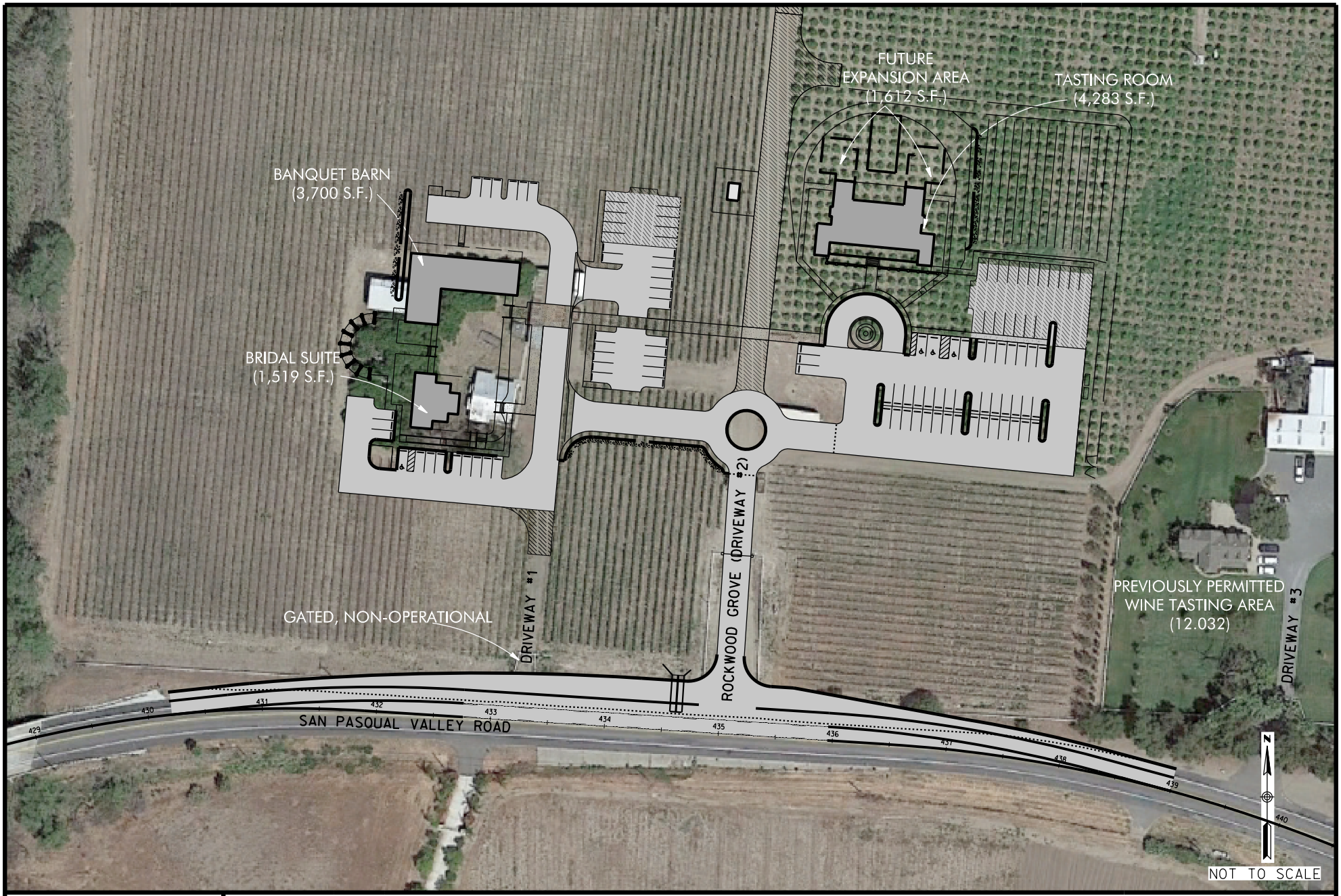


RICK ENGINEERING COMPANY

EXHIBIT 1

PROJECT LOCATION

RANCHO GUEJITO WINE TASTING FACILITY AND EVENT CENTER



RICK ENGINEERING COMPANY

EXHIBIT 2

PROPOSED SITE PLAN

RANCHO GUEJITO WINE TASTING FACILITY AND EVENT CENTER

3.0 Regulatory Background

3.1 SENATE BILL 743

Senate Bill 743 (SB 743), signed in 2013 and codified in Public Resources Code section 21099, changes the way transportation impacts are identified. Specifically, the legislation has directed the Governor's Office of Planning and Research (OPR) to look at different metrics for identifying transportation as a California Environmental Quality Act (CEQA) impact.

A key element of SB 743 is the elimination of vehicle delay, level of service (LOS), and other similar measures of vehicular capacity and traffic congestion as a basis for determining significant impacts. Switching the focus from LOS to VMT supports balancing the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

3.2 CEQA GUIDELINES ON ANALYZING VEHICLE MILES TRAVELED

Section 15064.3 of the CEQA Guidelines, adopted in December 2018 to implement SB 743, effective July 1, 2020, describes the criteria for evaluating a project's transportation impacts. Section 15064.3 gives agencies options in assessing transportation impacts with regard to VMT. The lead agency has discretion to choose the most appropriate methodology and can use its professional judgment based on substantial evidence to adjust its analysis accordingly. Where quantitative models or methods are unavailable to estimate VMT for a particular project, Section 15064.3 (b)(3) allows agencies to assess VMT qualitatively, as explained below:

> 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.

Additionally, the Technical Advisory on Evaluating Transportation Impacts in CEQA issued by the Governor's Office of Planning and Research (OPR) in December of 2018 (Technical Advisory) provides further guidance on assessing VMT, with different methodologies, significance thresholds, and mitigation measures. The Technical Advisory adds that there are several ways to assess VMT. These include trip-based assessment, tour-based assessment, trip, and tour-based assessment, and assessing change in total VMT. The Technical Advisory states that lead agencies should analyze the effects of retail projects by assessing the change in total VMT because retail-type projects typically re-route travel from other retail destinations. A retail project may lead to increases or decreases in VMT depending on the existing travel patterns for an area. Using estimated total change in VMT allows for analysis of whether a project is likely to divert existing trips, and what the net effect of those diversions will be on the total VMT. Similar to retail uses, the Proposed Project is likely to re-route travel from other destinations, as further explained herein; therefore, for the purposes of this memorandum, the Proposed Project will be analyzed via total change in VMT using a qualitative method.

3.3 SAN DIEGO COUNTY TRANSPORTATION STUDY GUIDELINES

On June 24, 2020, the Board of Supervisors approved the San Diego County Transportation Study Guidelines (SDTSG). The SDTSG includes the process and procedures for project applicants and their consultants to use when preparing transportation analysis in the unincorporated area. The SDTSG provides for a complete evaluation of quantitative and qualitative analyses for traffic related impacts. This includes objective and predictable evaluation criteria and performance measures for determining whether a land development project or a public project such as a community plan has a significant traffic impact on the environment pursuant to CEQA. Consistent with OPR's Technical Advisory (see Page 16), the SDTSG identifies the threshold of significance for VMT impacts for retail or regional recreational projects as a net increase in total area VMT.

The SDTSG indicates that VMT analysis for CEQA should be conducted using the SANDAG Regional Travel Demand Model (Travel Model) unless otherwise approved by Planning and Development Services staff. The model cannot be used to evaluate a unique project type and a qualitative analysis is therefore provided.

4.0 Methodology

Key research tools utilized in this memorandum include the examination of various regional traffic criteria and thresholds of significance. RICK examined the following technical studies: Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR, December 2018), CARB Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals (revised January 2019), County of San Diego Transportation Study Guidelines (June 2020), Institute of Transportation Engineers Trip Generation Manual, 10th Edition, and, San Diego County Economic Impact of Wineries Report (2019). Additionally, RICK conducted interviews with the president of the San Diego County Vintners Association and a local expert on wineries in Southern California.

As explained in Section 3.0 above, the County has discretion under CEQA to analyze, interpret, and apply its own thresholds of significance. Where existing models or methods are not available to estimate the vehicle miles traveled for a particular project, a lead agency may analyze the project's VMT qualitatively. Here, the Travel Model cannot accurately estimate VMT for the Proposed Project, for the following reasons:

- The Travel Model cannot accurately capture the nature of wine tasting trips
- The Travel Model only captures weekday traffic
- Inputs to the Travel Model would be purely employment based
- Comparative wine tasting facilities are located outside of the Travel Model's region

Since VMT does not directly measure traffic operations but instead measures network use and efficiency, the Traffic Model cannot accurately account for the nuances of wine tasting trips that are captured from existing trips throughout the region. In order to qualitatively account for VMT impacts, the Proposed Project must assess the total change in VMT with and without the project, answering the question "what is the net effect of the project on the area's VMT?" For the purposes of this memorandum and consistent with the SDTSG , the threshold of significance for the Proposed Project would be a net increase in total area VMT o. In the sections below, RICK has evaluated the Proposed Project's VMT impacts according to the current regional VMT average, the project's proximity to other destinations, and project features that would further reduce VMT.

5.0 Analysis

Many factors can influence travel demand. Since VMT is a measure of travel demand, understanding the influencing factors provides a greater comprehension of VMT and the mechanisms that affect VMT. To accomplish this, RICK has qualitatively evaluated the area in which driving patterns may change by analyzing the nature of trips generated by the Project, the Project's location to nearby attractions, and project features that would further reduce VMT. This method for evaluating VMT can measure if a project is likely to divert existing trips, and what the effect of those diversions will be on VMT. In order to gather the information needed to analyze the VMT impacts for the proposed winery tasting room and event facility, RICK consulted several sources of information, including industry data, comparison with existing uses, and conducted several interviews. The following sections are evaluated by wine tasting and trip generation, the projects proximity to local and regional attractions, and project features that would further reduce VMT.

5.1 Wine Tasting and Trip Generation

This section reviews the nature of trips generated within the immediate Proposed Project vicinity. Research utilized includes two interviews from September 25, 2020 with Ed Embly, president of the San Diego County Vintners Association and Jim Treglio, a local expert on wineries in Southern California. This section also analyzes the findings of the San Diego County Vintners Association's 2019 San Diego County Economic Impact of Wineries report. The report uses survey data, economic modeling software, and public datasets to highlight the important economic opportunities and policy choices which impact this specific agricultural sector and influence factors contributing to VMT.

The Proposed Project lays within the San Pasqual Valley, where agricultural land uses dominate the landscape. These agricultural uses include various orchard, vine, field crops, dairy operations, and pastureland. The area includes the San Pasqual Valley American Viticultural Area (AVA) and is home to approximately 22 wineries and tasting rooms.

According to the 2019 San Diego County Economic Impact of Wineries report, there are currently 181 active winegrower licenses in San Diego County, and approximately 115 operating tasting rooms. The report found that a majority of these wineries and tasting rooms are clustered together within the Ramona Valley and San Pasqual Valley area, as shown below in Exhibit 3. RICK further investigated this finding and detailed the following Exhibit 4 shown below demonstrating the Proposed Project in close proximity with other local wineries within a 10-mile radius.

Since wineries and winery tasting rooms are often clustered nearby each other, a typical wine tasting outing involves groups of two or more leisurely visiting several wineries throughout the day. This means trips between these wineries are often captured by a diverted trip to or from another nearby winery. Therefore, trips to the proposed winery would most likely consist of existing trips that

were redistributed and captured by the Proposed Project serving the local area, effectively lowering the total VMT for the Proposed Project.

In analyzing the interview data, two themes emerged. These themes were: the nature of wine tasting trips within the San Pasqual and Ramona Valley area and these wineries serving as local attractions. During the interview, when asked on average how many patrons the wineries see in a single day, both Embly and Treglio answered between 25-75 people a day and stated that most of the customers they see carpool, averaging two people per vehicle. It was also mentioned that there are several wine tour companies based in Ramona and Escondido which tour wineries within San Pasqual and Ramona Valley. Embly stated he sees the wine tour companies about 10-12 times a week and that they average 6-15 patrons per tour vehicle.

Embly noted that he has been keeping track of where existing wine tasting visitors are coming from and discussed his findings as follows:

> Approximately 60% of customers come from within the immediate area, meaning they live within 10 miles of the wineries here, and about 30% come from the greater San Diego area. Only about 10% of customers come from out of state.

On average small wineries are open three days a week (most often Friday, Saturday and Sundays), with hours of operation varying slightly. A majority of the wineries in the region operate from 11:00AM to 6:00PM. For example, the existing Rancho Guejito Wine Tasting Facility and Event Center (which is currently closed due to Covid-19) is typically open Saturdays and Sundays from 11:00 AM to dusk. However, there are several other wineries that are open 4-7 days/week, including Orfila, Old Coach Vineyards, Chuparosa Vineyards, Cordiano (5 days/week), and Speckle Rock Vineyards (4 days/week), all located within approximately 7 miles of the Proposed Project site.

Wine tasting may occur year-round; however according to the Wine Institute, June through October offers the warmest, sunniest, and driest California weather making this the typical "high season" for wine tasting. The late fall and winter months are generally not as popular for wine tasting due to cooler weather and shorter daylight hours. The Bureau of Transportation Statistics explains that VMT tends to be seasonal with month-to-month movement however overall VMT year-to-year should be similar. The Proposed Project is not expected to substantially increase VMT since the area already includes numerous wineries and would continue to capture trips that are currently being generated by the existing nearby attractions.

Additionally, the complimentary part of the Proposed Project includes the special event facility. Both Orfila and Cordiano offer a special event facility and have an existing capacity to serve up to 160-350 patrons per event. The maximum capacity for the Proposed Project's special event facility would be 250 persons and the wine tasting room has a maximum capacity of 200. Both the tasting room and the event facility could be operated simultaneously and year-round. The event facility use is expected to operate mostly on weekends and for special occasions such as weddings. Weddings in San Diego County most often occur between April and September, with June being the most popular month. Other select uses of the event facility may occur during the

weekdays for events such as retirement parties or business luncheons. However, the impacts related to the special event facility use are expected to be less than significant since the use of the facility would occur only on select occasions, and most often on weekends when overall vehicle travel is less. Furthermore the event facility would not induce events, rather the venue holds another option for facility use within the region.

Finally, development of the Proposed Project would also have the effect of diverting trips to destinations outside the County, in particular, to Temecula, that may otherwise occur because the Proposed Project would increase opportunities for wine tasting experiences in San Diego County, as described in section 5.2 below.

For further analysis of the existing nearby wineries see Exhibits 3 and 4 below, which detail the full area over which the Proposed Project affects travel behavior in relation to nearby wineries.

5.2 PROJECT PROXIMITY TO REGIONAL DESTINATIONS

As mentioned above, trips to the Proposed Project would most likely come from other nearby wineries. Thus, the trip generating characteristics of the Proposed Project would not impact VMT as it would continue to capture trips that are currently being generated by the existing nearby wineries, or reroute trips from more distant locations such as Temecula in Riverside County. This section analyzes the Proposed Projects impact on reducing VMT to farther destinations.

The Proposed Project is centrally located next to several large urban centers within the San Diego County region. For example, the Project is approximately 20 miles northeast of the City of San Diego and 6-10 miles away from urban centers such as Escondido and San Marcos. Contrary to the Temecula Valley, located an additional 35 miles north of the Project area, and 55 miles from the City of San Diego. Wineries within the San Pasqual and Ramona Valley offer a significantly closer alternative to Temecula. Additionally, the event facility component of the Proposed Project also offers a closer winery venue option for weddings and special events therefore diverting longer trips to Temecula from San Diego.

In addition to offering locals a closer wine tasting experience, there are several other major attractions located adjacent to the Proposed Project, including the San Diego Zoo Safari Park and the City of Escondido. The San Diego Zoo Safari Park, averages approximately 2,000,000 visitors annually and the City of Escondido has an estimated population of 150,000. Proximity to these attractions effectively lowers overall VMT by providing options for entertainment closer to where San Diego residents live and already travel.

Overall, this research demonstrates the existing trips generated within the area largely center around wine tasting. Ultimately, residents who want to go wine tasting will do so whether or not this particular Project exists. With more wine tasting opportunities that are located closer to San Diego communities the more likely wine tasting trips will stay local instead of seeking resources like Temecula that are farther away.

5.3 PROJECT FEATURES THAT FURTHER REDUCE VMT

In addition to not having a significant impact on VMT under CEQA due to local wine tasting travel behavior, the Proposed Project includes several features that further reduce VMT and benefit the overall region. These features include shuttle/tour services and carpooling incentives that include preferred parking. These VMT reducing project features are also supported by the OPR Technical Advisory, pages 26-28 and the SDTSG, pages 23 and 32.

The project will designate preferred spaces for those who carpool. Spaces would also be made available to the tour companies which regularly travel through the area. In addition, the project applicant will provide free tastings to those who use shuttle/tour services or carpool. By incentivizing carpooling and shuttle/tour services the project can reduce parking demand and the overall vehicle trips through the area. The Project applicant plans to engage with the regions Vintners Association and other local winery member associations to encourage tour and carpool trips rather than single trips through the area.

As mentioned above, wine tasting is often a group activity, thus implementing incentives for carpooling are expected to be well received and utilized. Reducing individual trips through shuttle and rideshare benefits VMT reduction for both the immediate project area and regionally as more options for ridesharing become available.

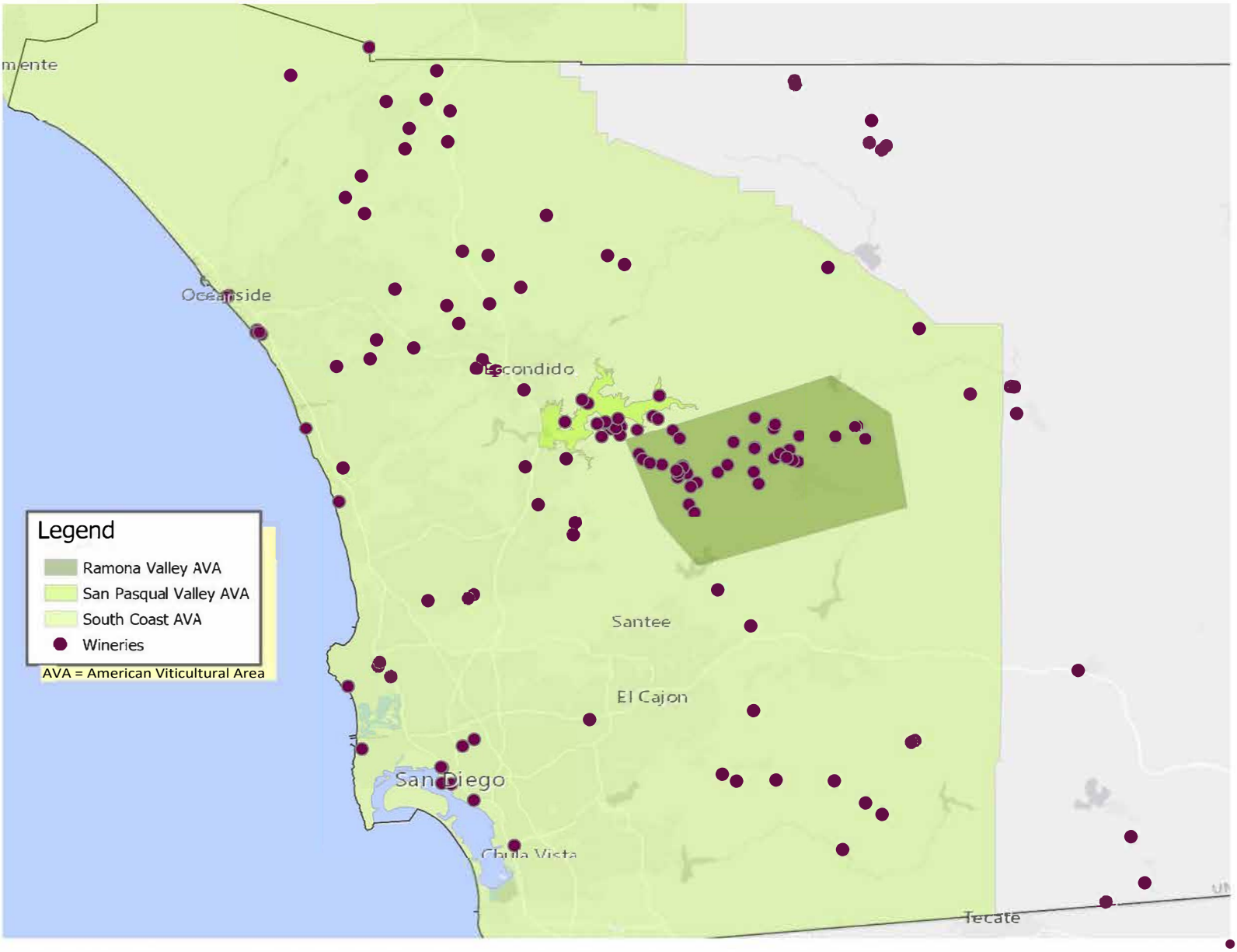


Exhibit 3: Wineries and Satellite Tasting Rooms in San Diego County

Source: 2019 San Diego County Economic Impact of Wineries Report

Rancho Guejito Tasting Facility

Wineries within 10 Miles

10 Mile Radius

15

78

SAN MARCOS

ESCONDIDO

RANCHO GUEJITO TASTING FACILITY

Lake Henshaw

Ramona

POWAY

CITY OF SAN DIEGO

56

67

0 1.25 2.5 Miles SOURCE: USGS

Exhibit 4

Tasting Facilities in a 10 Mile Radius

Rancho Guejito

6.0 Conclusion

This memo has assessed the potential change in VMT by looking at the projects expected impact on local VMT patterns and the projects impact on diverting trips from farther away destinations. The findings outlined in this memo demonstrate that the Proposed Project, as defined herein, would have a less than significant impact on VMT. The proposed winery and event facility use cannot be evaluated with existing quantitative methods including the Travel Model, since these methods fail to capture the nature of winery and event facility trips. Therefore, the Proposed Project requires a qualitative evaluation. The proposed winery and event center trip generation analysis were examined by reviewing the nature of wine tasting and trip generation, the projects proximity to local and regional attractions, and project features that would further reduce VMT.

Overall, it was found that, the Proposed Project is not expected to impact VMT because trips generated through the project area come from existing nearby attractions. Trips to the Proposed Project site are most likely to come from an existing diverted trip, resulting in less than significant VMT impacts under CEQA. Furthermore, the Proposed Project includes features such as shuttle/tour services and carpooling incentives which further reduce total VMT.

References

County of San Diego Transportation Study Guidelines, June 2020

2019 San Diego County Economic Impact of Wineries

Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018

CEQA Guidelines Implementing SB 743, CEQA Handbook 2020

Rancho Guejito Wine Tasting Facility and Event Center Focus Traffic Impact Study

San Diego County Farm Bureau: Winery Listings

Lovejoy, et al. (2013) Measuring the impacts of local land-use policies on vehicle miles of travel: The case of the first big-box store in Davis, California, The Journal of Transport and Land Use.

Appendix A: County of San Diego Transportation Study Guidelines

COUNTY OF SAN DIEGO

TRANSPORTATION STUDY GUIDELINES

JUNE 2020 - FINAL

This page intentionally left blank

APPROVAL

I hereby certify that the **County of San Diego Transportation Study Guidelines** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and were considered by the Director of Planning & Development Services, in coordination with the Director of Public Works on the 24th day of June, 2020.

MARK WARDLAW
Director of Planning & Development Services

JEFF MONEDA
Director of Public Works

I hereby certify that these **County of San Diego Transportation Study Guidelines** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and have hereby been approved by the Deputy Chief Administrative Officer of the Land Use and Environment Group on the 24th day of June, 2020. The Director of Planning & Development Services is authorized to approve revisions to these County of San Diego Transportation Study Guidelines, except any revisions to the CEQA VMT thresholds of significance contained in Section 3 *CEQA Requirements for Transportation VMT* must be approved by the Deputy Chief Administrative Officer.

Approved: June 24, 2020

SARAH AGHASSI
Deputy Chief Administrative Officer

LIST OF PREPARERS AND TECHNICAL REVIEWERS

APPROVED – June 24, 2020

County of San Diego

Jacob Armstrong, PDS, Co-Author

Damon Davis, PDS, Co-Author

Robert Efird, PDS, Co-Author

Gregory Kazmer, PDS, Technical Review

Richard Chin, DPW, Technical Review

Zoubir Ouadah, DPW, Technical Review

Nick Ortiz, DPW, Technical Review

Consulting Team

Katy Cole, Fehr & Peers

Andrew Scher, Fehr & Peers

Dawn Wilson, Michael Baker International

Table of Contents

Tables

Figures

Appendices

List of Abbreviated Terms

ATP	Active Transportation Plan
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CEQA	California Environmental Quality Act
County	County of San Diego
CSTDM	California Statewide Travel Demand Model
CTMP	Community Trails Master Plan
DER	Design Exception Request
DOT	Department of Transportation
DPW	Department of Public Works
EIR	Environmental Impact Report
FHWA	Federal Highway Administration
FLMA	Focused Local Mobility Analysis
GHG	greenhouse gas
GPA	General Plan Amendment
HCM	Highway Capacity Manual
ICE	intersection control evaluation
ITE	Institute of Transportation Engineers
IX	internal-to-external
LMA	Local Mobility Analysis
LOS	Level of Service
MTS	Metropolitan Transit System
MUTCD	Manual on Uniform Traffic Control Devices
MXD	mixed-use development
NCTD	North County Transit District
O-D	origin-destination
OPR	Governor's Office of Planning and Research
PCE	passenger car equivalent
PDS	County Planning & Development Services
PHF	peak hour factor
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SB	senate bill
SCS	Sustainable Communities Strategy
TAZ	transportation analysis zone
TDM	transportation demand management
TSG	Transportation Study Guidelines
TSM	transportation system management
XI	external-to-internal
XX	external-to-external

Definitions

Average Daily Traffic - The average 24-hour traffic volume at a given location.

Active Transportation Plan - The County's Active Transportation Plan (2018) supports efforts to promote active transportation through pedestrian and bicycle improvements in the unincorporated county.

Capacity - The maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

Climate Action Plan - The County's Climate Action Plan sets forth strategies and measures to reduce greenhouse gas emissions in the county's unincorporated areas and from County operations.

California Environmental Quality Act - The California Environmental Quality Act requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible.

Community Trails Master Plan - The County Trails Program facilitates the development of a system of interconnected regional and community trails and pathways.

Greenhouse Gas - Greenhouse gases are those gases in the atmosphere that have an influence on the earth's energy balance by trapping heat.

General Plan Amendment - General Plan Amendments are required for development projects with a land use or density that is not permitted by the General Plan.

Induced Travel - Induced travel or the VMT attributable to a transportation capacity increase is the increased amount of vehicle travel that is caused by the highway capacity increase.

Local Mobility Analysis – An evaluation that takes place *outside of CEQA* to assess the effects of a proposed development project on traffic operations and safety for the roadway network in the proximate area of the project.

Level of Service – Level of Service is used to analyze roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on delay or density.

Regional Transportation Plan – The RTP is produces by SANDAG and serves as the blueprint for a regional transportation system that further enhances our quality of life, promotes sustainability, and offers more mobility options for people and goods.

Transportation Analysis Zone – TAZs are units of geography used in the Travel Demand Model and contain critical information; such as, the number of automobiles per household, household income, and employment that is utilized to further understand of trips that are produced and attracted within the zone.

Transportation Demand Management – Various strategies that result in more efficient use of transportation resources with the goal of reducing VMT.

Travel Demand Model - A travel demand model is any relatively complex computerized set of procedures for predicting future trip making as a function of land use, demographics, travel costs, the road system, and the transit system.

Vehicle Miles Traveled - The number of miles traveled by motor vehicles on roadways in a given area over a given time period.

1. Introduction

1.1. Background

The County of San Diego previously adopted *"Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic"* in 2006, with revisions and modifications approved in 2007, 2009, 2010 and 2011. Revisions and modifications focused primarily on metrics related to vehicle delay through Level of Service (LOS). These Guidelines presented an evaluation of quantitative and qualitative analyses and objective and predictable evaluation criteria and performance measures for determining whether a land development project or a public project like a community plan has a significant traffic impact on the environment pursuant to the State California Environmental Quality Act (CEQA), as well as a determination of the required level of CEQA analysis.

CEQA Changes

Senate Bill 743 (SB 743) was signed into law on September 27, 2013 and changed the way that public agencies evaluate transportation impact under CEQA. A key element of this law is the elimination of using auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant transportation impacts under CEQA. The legislative intent of SB 743 was to "more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas (GHG) emissions." According to the law, "traffic congestion shall not be considered a significant impact on the environment" within CEQA transportation analysis.

In response, the Governor's Office of Planning and Research (OPR) updated CEQA Guidelines to establish new criteria for determining the significance of transportation impacts. Based on input from the public, public agencies, and various organizations, OPR recommended that Vehicle Miles Traveled (VMT) be the primary metric for evaluating transportation impacts under CEQA. VMT measures the number of vehicle trips generated and the length or distance of those trips. For instance, if one vehicle drives ten miles from home to the grocery store, that trip generated ten VMT. If three vehicles each drive ten miles to the grocery store, then they collectively generate 30 VMT. VMT is generally expressed as VMT per capita for a typical weekday. Typically, projects that are farther from other complementary land uses, such as jobs and commercial activities and in areas without transit or active transportation infrastructure (bike lanes, sidewalks, etc.) generate more driving than development near complementary land uses with more robust transportation options.

SB 743 does not prevent a city or county from continuing to analyze delay or LOS as part of other plans (i.e., General Plan), studies, congestion management and transportation improvements, but these metrics may no longer constitute the basis for transportation impacts under CEQA analysis as of July 1, 2020. For example, in the County, the General Plan identifies LOS as being a required analysis, and even though it will no longer be a requirement of CEQA, unless the General Plan is amended, LOS will continue to be analyzed as part of project review.

In response to changes in State law, the County has developed a Transportation Study Guide (TSG) to identify requirements for both CEQA VMT analysis and discretionary entitlement non-CEQA Local Mobility Analysis (LMA).

County General Plan Goals and Policies

The County's General Plan was adopted in August of 2011, before the passage of SB 743. Therefore, the Mobility Element was developed and planned based on the previous LOS requirements under CEQA. In addition to text in the Mobility Element that relates to transportation, there are also related goals in the Land Use, Housing, and Conservation and Open Space elements. For a list of General Plan goals related to transportation and assessing transportation impacts, please see **Appendix G**.

While SB 743 requires that LOS no longer be used for transportation impact assessments under CEQA, the General Plan contains policy M-2.1, which requires development projects to achieve a LOS "D" or better on all Mobility Element roads. The TSG proposes a methodology to meet the County General Plan requirement for LOS "D", outside of CEQA. The LMA provides a methodology to identify development-related circulation and access deficiencies, and specific operational, road safety, and adequate transportation infrastructure improvements to maintain LOS "D" with the addition of new projects.

Future actions by the County Board of Supervisors may include changes to the General Plan to complement the standards and methods of analysis contained in this TSG. In particular, changes to the Mobility and Land Use elements will most directly enhance the County's desired application of both VMT and LOS in transportation planning.

County Climate Action Plan and Active Transportation Plan

The County Climate Action Plan (CAP), adopted in February 2018, and the County Active Transportation Plan (ATP), adopted in October 2018, also support the intent of SB 743. The CAP has two GHG emissions reduction strategies related to VMT. CAP Strategies T-1 and T-2 focus on reducing VMT and shifting towards alternative modes of transportation, focusing density in unincorporated villages, conserving open space and agricultural lands, and implementing infrastructure improvements to provide for active transportation. A transportation demand management (TDM) ordinance, being developed as a measure of the CAP, will be an important tool for non-residential projects to use when mitigating VMT impacts while also reducing GHG emissions. The CAP and ATP identify capital improvements related to pedestrian and bicycle infrastructure improvements that SB 743 mitigations could fund in the future.

1.2. Purpose

The TSG provides criteria on how projects should be evaluated for consistency related to the County's transportation goals, policies and plans, and through procedures established under CEQA. The TSG establishes the contents and procedures for preparing a Transportation Study in the County of San Diego. The TSG aids in determining appropriate mitigation under CEQA, as well as site specific improvements to the transportation system to accommodate project traffic.

Reasons to perform a transportation study:

- Provide information to the public and decision-makers.
- Implement CEQA and County General Plan policies.
- Provide a method for analyzing the transportation effects of development projects.
- Provide applicants with transportation-related project and site planning recommendations.
- Establish a framework for transportation mitigation measures and project conditions for plans and projects.

1.3. Objectives

The following objectives are intended to provide consistency between local, regional and state policies in forecasting, describing and analyzing the effects of land development on transportation and circulation for all transportation modes and users:

- Provide clear direction to applicants and consultants to better meet expectations, increase the efficiency of the review process, and minimize delays.
- Provide scoping procedures and recommendations for early coordination during the planning/discretionary phases of a land development project.
- Provide guidance in determining when, what type, and how to prepare a Transportation Study.
- Help achieve consistency, uniformity and accuracy in the preparation of a Transportation Study.
- Promote quality assurance in transportation studies by agreeing to the assumptions, data requirements, study scenarios, and analysis methodologies.
- Provide consistency and equity in the identification of measures to mitigate the transportation impacts generated by land development.
- Assist County staff in developing objective recommendations and project conditions of approval as part of the land development discretionary review process.
- Help to ensure that County transportation studies are in conformance with all applicable County, region and state regulations, including legislative requirements as part of CEQA.

1.4. CEQA vs. Non-CEQA Transportation Analysis

The County TSG is a comprehensive manual for both CEQA VMT analysis and discretionary/ entitlement non-CEQA LMA. The TSG provides guidance for the two elements of transportation analyses needed to comprehensively assess the potential effects from new development to the County's roadway and mobility system.

CEQA Transportation Analysis (VMT Analysis)

CEQA requires VMT analysis for compliance with state policies to evaluate a project's potential impacts related to VMT significance criteria. The VMT analysis will:

- Enable proposed development projects to comply with current CEQA requirements as a result of the implementation of SB 743.
- Outline the County's VMT significance thresholds, screening criteria, and methodology for conducting the transportation VMT analysis.
- Help determine if mitigation is required to offset a project's significant VMT impacts.
- Identify VMT reduction measures and strategies to mitigate potential impacts below a level of significance.
- Reduce the need to widen or build roads through effective use of the existing transportation network and maximizing the use of alternative modes of travel throughout the County.

Non-CEQA Transportation Analysis related to General Plan Requirements

Site Access Scoping Review

A Site Access Review is required by the County of San Diego for all projects. A Site Access Review is conducted by County staff and the applicant as part of the Scoping Agreement to confirm safe ingress and egress between the project site and public transportation network. Site access driveways and/or the intersection(s) that provides access to County Public Roads are included in the Scoping Review.

Local Mobility Analysis (LMA)

An LMA is required by the County General Plan to assess transportation effects and ensure orderly development, public safety, adequate infrastructure, and consistency with the General Plan. The LMA analysis will:

- Ensure that the local transportation system is adequate to serve the project and that improvements identified in the General Plan are constructed when needed consistent with the County's Public Road Standards.
- Address issues related to operations and safety for all transportation modes.
- Ensure consideration and potential conditioning of the County's Active Transportation Plan for bicycle and pedestrian facilities.
- Identify the necessary operational transportation entitlement conditions for land development projects.
- Outline the County's screening criteria, study area, and methodologies to assess the potential need for off-site operation and safety improvements to the project study area transportation network.

- Establish measures of effectiveness to maintain transportation LOS consistent with the County's General Plan Mobility Element.
- Facilitate on-site project access and roadway frontage design infrastructure improvements to serve the project and the surrounding community.

1.5. Process Overview

The TSG is intended for use by County staff, project applicants, consultants, other agencies/jurisdictions, as well as the general public and decision makers, to evaluate transportation effects of proposed land development projects going through the environmental and discretionary planning/entitlement process within the jurisdiction of the County of San Diego.

Preparer Qualification Requirements

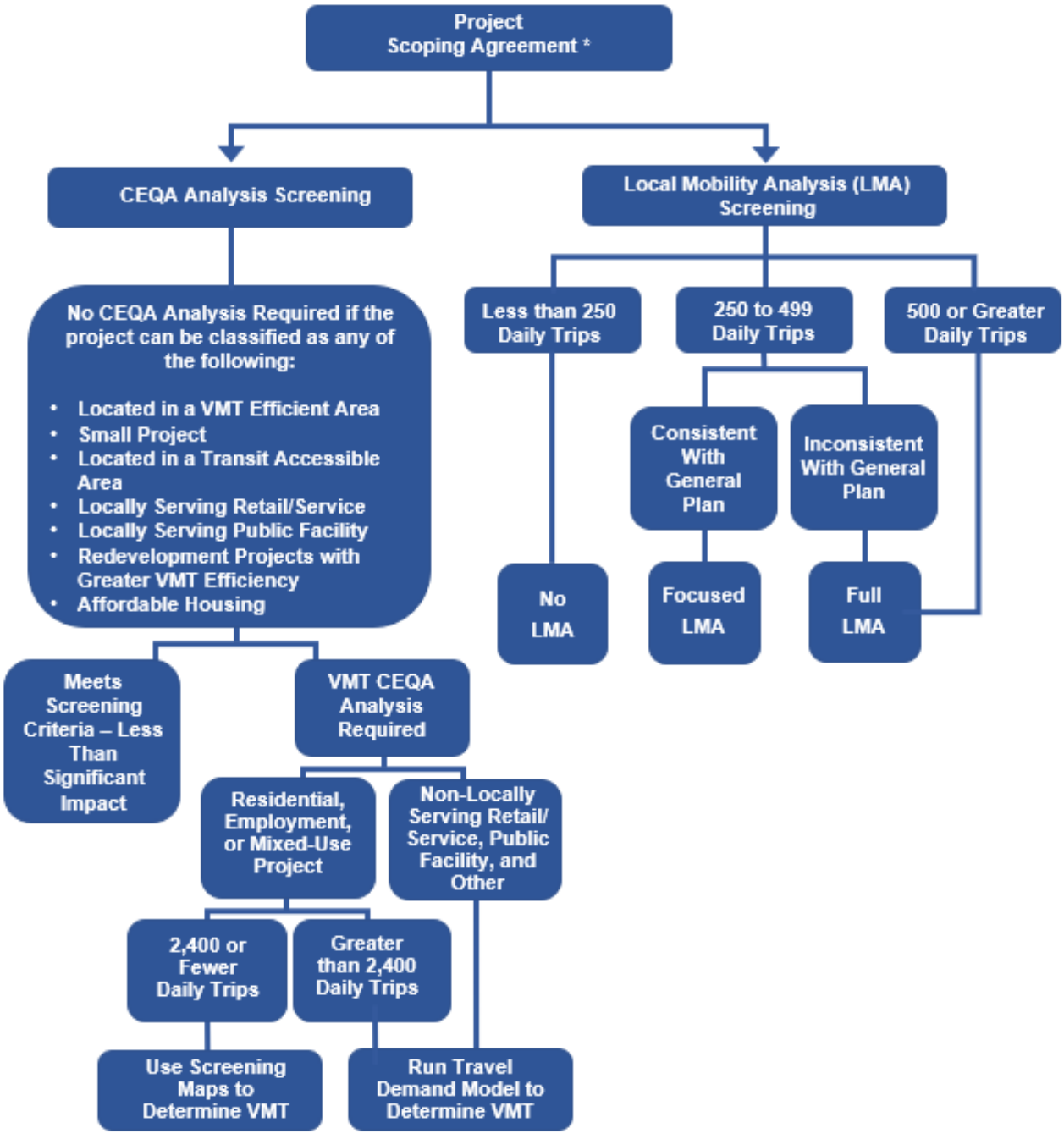
Transportation Studies must be prepared under the supervision of a registered Traffic Engineer who has specific training and experience in preparing transportation studies. All transportation studies must be stamped by a California Registered Traffic Engineer or equivalent as approved by County Planning & Development Services (PDS) or Department of Public Works (DPW).

County Review and Outside Agency Coordination

Transportation Studies for land development projects will be reviewed by County PDS and DPW.

If a County project affects another agency or jurisdiction, such as Caltrans, SANDAG, MTS, NCTD, or neighboring cities, coordination with that agency or jurisdiction may be required and will be identified in the scoping review process. County of San Diego staff can provide guidance and contact information for other agencies or jurisdictions.

FIGURE 1 – SCOPING FRAMEWORK FOR TRANSPORTATION STUDIES



**A project may require: LMA analysis only, CEQA analysis only, LMA and CEQA analysis, or no LMA or CEQA analysis*

Outline of Study Preparation and Review Process

The following summarizes the typical process for completing a Transportation Study in the County of San Diego:

- **Step 1 – Determine Study Requirements:** The applicant completes a Scoping Agreement for Transportation Studies (Appendix A – Scoping Agreement for Transportation Studies) that summarizes the proposed project description, location, site plan, site access, estimated trip generation and trip distribution, study area, methodology requirements, and any other specific issues to be addressed in the Transportation Study. The Scoping Agreement also includes preliminary screening criteria to determine if the project is screened out from CEQA Transportation Analysis and information to determine if a LMA is required.
- **Step 2 – Scoping Review and Agreement:** The completed project Scoping Agreement is submitted to the County of San Diego, along with the required fee deposit for review and approval. The County will either provide a letter confirming the Scoping Agreement or communicate other requirements. The applicant's consultant may request a meeting to clarify the draft work scope and the County's feedback. The Scoping Agreement will determine the type of Transportation Study that will be needed.
- **Step 3 – Conduct Transportation Study and Submit Draft:** The applicant's consultant will prepare the Transportation Study consistent with the requirements established in Steps 1 and 2 (and as outlined in the TSG) and will submit a draft to the County (Appendix B – Transportation Impact Study Format). The County will provide written comments on the draft study. During this process, the applicant's consultant may request a meeting with County staff to clarify study requirements or comments received on the draft study.
- **Step 4 – Submit Final Transportation Study:** The applicant's consultant will address all County comments and produce a Final Transportation Study to be approved by staff. Multiple iterations of study review may be necessary to adequately address all staff comments. It is critical that staff and the traffic consultant coordinate closely during the review process to ensure productive and efficient communications in achieving the mutual goal to finalize the Transportation Study. A record identifying how each comment was addressed should also accompany the Final Transportation Study. Depending on whether the Transportation Study included a VMT analysis, a LMA, or both, the final mitigation recommendations or improvements will be either in the CEQA Findings and/or the discretionary Conditions of Approval.

The County may update the TSG on an as-needed basis to reflect the best state of practice methodologies and changes in CEQA requirements. As such, the County will continually review the TSG for applicability and coordinate with other jurisdictions and professionals to ensure the most recent guidance and best practices are being applied for land development review and transportation analysis.

The TSG is not binding on any decision-maker and should not be substituted for the use of independent professional judgment and evaluation of evidence in the record. The County also reserves the right to request further, project specific, information in its evaluation that may not be identified or described in this document.

2. Transportation Study Initiation

If a project requires a discretionary action, the applicant and County staff will determine the Transportation Study requirements according to TSG.

The Transportation Study process begins with the applicant's consultant filling out a Scoping Agreement form (**Appendix A**), which serves as an application for transportation study scoping.

2.1. Types of Transportation Studies

CEQA and LMA requirements should be determined separately, as CEQA VMT analysis and/or LMA may apply to any type of transportation study. The following types of transportation studies (or a combination) may be required:

1. **No Transportation Analysis Required:** If a project meets screening criteria for CEQA VMT analysis and LMA, a Transportation Study will not be required.
2. **CEQA VMT Analysis Only:** Transportation studies where only CEQA VMT analysis is required because the project meets LMA screening criteria.
3. **LMA Only:** Transportation studies where only an LMA (Focused LMA or Full LMA) is required because the project meets CEQA VMT screening criteria.
4. **CEQA VMT and LMA Analysis:** Transportation studies that include both CEQA VMT analysis and a LMA (Focused LMA or Full LMA). This is required for projects that are not screened out based on the County's screening criteria outlined in following section.

2.2. Transportation Study Screening Criteria

Discretionary projects may need to complete a Transportation Study as identified in Tables 1 and 2. A project's consistency with the General Plan, estimated daily trips, project location, and other project characteristics will determine the type of study that is required based on the CEQA VMT and LMA screening criteria presented in Tables 1 and 2, respectively.

TABLE 1 – CEQA VMT SCREENING

CEQA VMT Screening Criteria
1. Small Residential and Employment Projects
• Less than 110 daily vehicle trips (trips are based on the number of vehicle trips after any alternative modes/location-based adjustments are applied)
2. Projects Located in VMT Efficient Areas

• Use location-based screening maps (consistent with the project land uses)
3. Locally Serving Retail Projects
• Projects that are 50,000 square feet or less
4. Locally Serving Public Facilities
• Public facilities that serve the local community including transit centers, public schools, libraries, post office, park-and-ride lots, other government offices, parks/trail heads, and passive public uses.
5. Redevelopment Projects with Lower Total VMT
• The proposed project's total daily project VMT is less than the existing land use's total daily VMT.
6. Affordable Housing
• 100% affordable housing

TABLE 2 – TYPE OF LMA BY DAILY PROJECT TRIPS

	Focused LMA	Full LMA
Consistent with General Plan	250-499 Daily Trips	500 or greater Daily Trips
Inconsistent with General Plan	N/A	250 or greater Daily Trips

For purposes of determining the LMA type, trips are based on the number of vehicle trips after any internal capture and alternative modes/location-based adjustments are applied but before adjustments for pass-by are taken.

Types of LMAs

- **Focused Local Mobility Analysis:** Applies only to a project consistent with the General Plan and forecast to generate 250 to 499 daily trips. A Focused LMA analysis is conducted for such projects to confirm that the project does not have an effect on the safety and operations of the transportation system and does not require a Full LMA.
- **Full Local Mobility Analysis**: Applies to a project consistent with the General Plan and forecast to generate 500 or more daily trips, or a project that is inconsistent with the General Plan and is forecast to generate over 250 daily trips. A Full LMA is required to ensure traffic operations and safety of the roadway network in the proximate area of the project, as well as ensure the local transportation system is adequate to serve the project and is consistent with County General Plan goals and policies.

2.3. Completing the Scoping Agreement Form

The applicant's consultant will prepare a Scoping Agreement (**Appendix A**) before coordinating with the County. This ensures that all the information necessary to determine study requirements is compiled and readily accessible.

The following main items are required to complete the Scoping Agreement:

Project Location

- Project location & vicinity map.
- Project Community Planning Area.
- Zoning and community plan land use designation of the project site (demonstrate consistency).

Detailed Project Description

- Land uses and intensities.
- Gross parcel acreage and net developable acreage or building square footage or number of proposed residential units.
- Number of parking spaces: vehicle (including accessible spaces), bicycle (racks and secure storage), motorcycle.

Site Plan

- Driveway locations and access type (ex. Full access, partial access, right in/out only).
- Pedestrian access, bicycle access and on-site pedestrian circulation.
- Location/distance of closest existing transit stop (measure as walking distance to project entrance/or middle of parcel).
- Location of any planned trails identified in the CTMP within ¼ mile of the project location.

CEQA Transportation Analysis Screening

- Project Type Screening
- Project Location Screening

LMA Study Area and Scenarios

- Study area and scenarios for LMAs are discussed further in Chapter 4.

LMA Trip Generation and Distribution

- Identify the number of new daily and peak hour driveway vehicle-trips added by the project as described in this section.

- Trip generation rates are commonly expressed in trips per unit of development – for example, trips per housing unit or trips per thousand square feet – and are derived by averaging trip generation data collected from existing land uses.

For San Diego County, the following trip generation sources should be used:

- The current edition of the Institute of Transportation Engineer's Trip Generation Manual and Trip Generation Handbook. The Trip Generation Manual provides average trip generation rates for a wide variety of land-use categories that is a nationally recognized transportation planning data source and industry standard.
- For unique land uses, trip generation should be derived from locally observed data that includes trip generation samples from at least three (3) similar facilities. The facilities selected as samples should be approved by County Staff prior to data collection.
- For existing facilities that are being expanded, trip generation should be determined by surveying the existing use to generate a project specific trip generation rate.
- The most detailed project information should be used to determine a project's trip generation estimate. For example, if the project's building square footage and the project acreage are both known, the building square footage is more detailed; therefore, should be used to estimate the trip generation.

Distribution of project trips throughout the study area can be estimated using two methods:

- Manual estimation using existing traffic volumes, location of complementary land uses, and engineering judgement. The trip distribution should be clearly communicated on a map that shows the percent of project traffic on each roadway in the vicinity of the project site. Manual estimation is appropriate for projects performing a Site Access Study, Focused LMA, or project's that generate less than 1,000 daily trips.
- Use the current version of the SANDAG Regional Travel Demand Model to perform a select zone analysis. The SANDAG Regional Travel Demand Model should be used to determine the trip distribution for projects that generate 1,000 or greater daily trips.

Additional information on trip generation, including trip reductions are discussed further in Chapter 4.

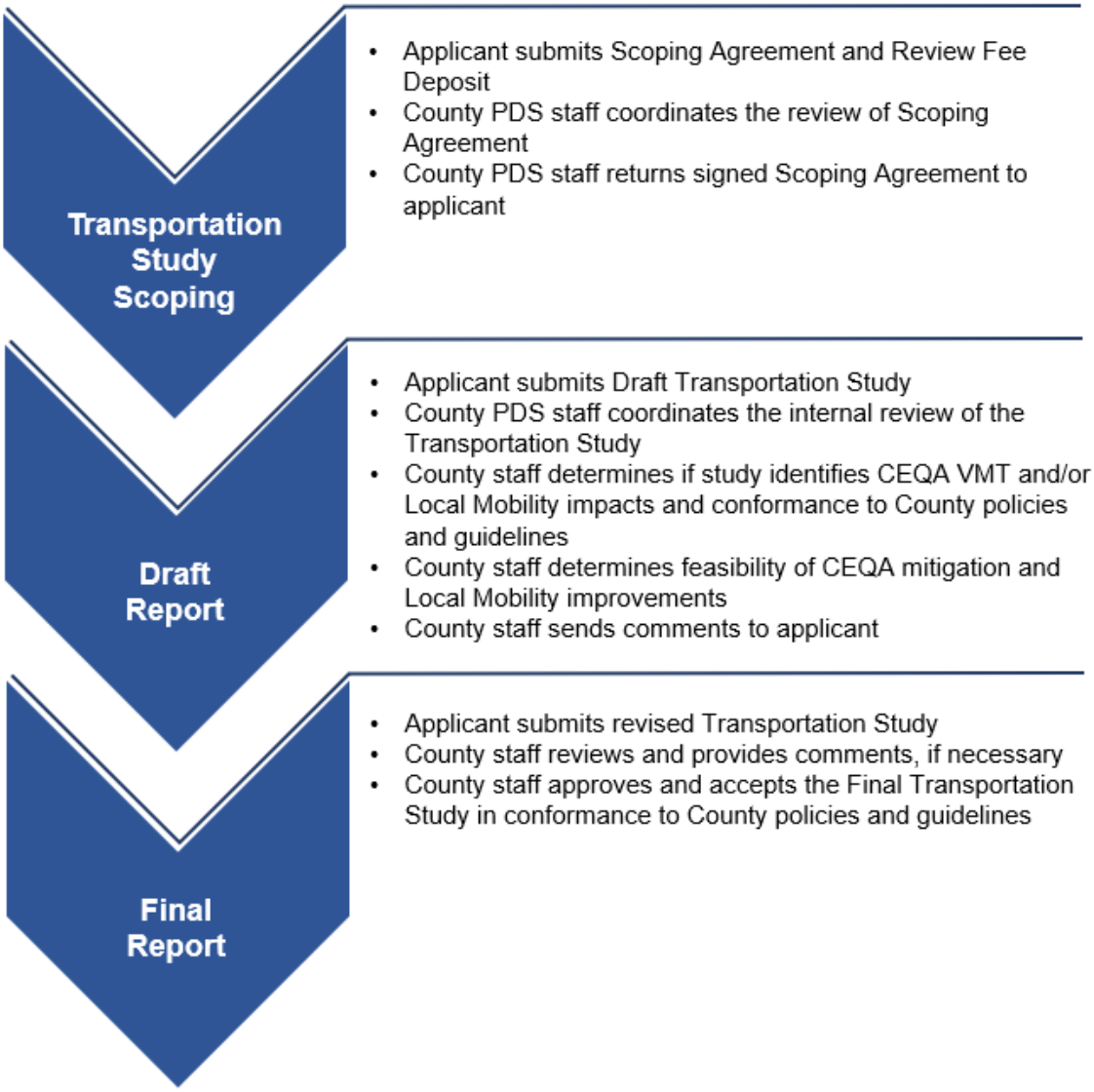
2.4. Submittal Instructions

The Scoping Agreement will be submitted as follows:

1. Scoping Agreement will be submitted to Planning & Development Services by the Applicant/Consultant. The Scoping Agreement form is available on the County PDS website (https://www.sandiegocounty.gov/content/sdc/pds.html).
2. Applicant/Consultant submits a completed Scoping Agreement including a fee deposit.
3. Staff begins the Scoping Agreement review and approval processes.
4. Staff sends a completed and signed Scoping Agreement to the Consultant.

5. Consultant submits a draft Transportation Study including a fee deposit.
6. Staff completes initial review.
7. If required, comments are submitted to the consultant and a revised Transportation Study is submitted. Additional review cycles may be required.
8. Upon completion, staff issues a final notice to the Applicant and the final Transportation Study is accepted for public review.

FIGURE 2 – TRANSPORTATION STUDY PROCESS OVERVIEW (PROJECT PLANNING REVIEW)



3. CEQA Requirements for Transportation VMT

3.1. Overview

SB 743 changes the focus of transportation impact analysis in CEQA from measuring impacts to drivers, to measuring the impact of driving. The change is being made by replacing LOS with VMT and providing streamlined review of land use and transportation projects that will help reduce future VMT growth. This shift in transportation impact focus is expected to better align transportation impact analysis and mitigation outcomes with the State's goals to reduce GHG emissions, encourage infill development, and improve public health through more active transportation.

In January 2019, the Natural Resources Agency finalized updates to the CEQA Guidelines including the incorporation of SB 743 modifications. The Office of Planning and Research (OPR) published its latest Technical Advisory on Evaluating Transportation Impacts in CEQA to the California Natural Resources Agency in December 2018. This Technical Advisory provides recommendations on how to evaluate transportation impacts under SB 743. These changes include elimination of auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant CEQA transportation impacts. CEQA Guidelines section 15064.3 states that "Generally, vehicle miles traveled is the most appropriate measure of transportation impacts" and the OPR guidance recommends the use of VMT as the preferred CEQA transportation metric. SB 743 includes the following two legislative intent statements:

1. "Ensure that the environmental impacts of traffic, such as noise, air pollution, and safety concerns, continue to be properly addressed and mitigated through the California Environmental Quality Act."
2. "More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of GHG emissions."

To comply with the new legislation, the County of San Diego has identified VMT analysis methodology, establishment of VMT thresholds for CEQA transportation impacts, and identification of possible mitigation strategies. The VMT analysis will:

- Enable proposed development projects to comply with current CEQA requirements as a result of the implementation of SB 743.
- Describe the County's CEQA significance thresholds, screening criteria, and methodology for conducting the transportation VMT analysis.
- Determine if mitigation is required to offset a project's significant VMT impacts.

- Identify VMT reduction measures and strategies to mitigate potential impacts below a level of CEQA significance.
- Reduce the need to widen or build roads through effective use of the existing transportation network and maximizing the use of alternative modes of travel throughout the County.

VMT is a metric that accounts for the number of vehicle trips generated and the length or distance of those trips. VMT does not directly measure traffic operations but instead is a measure of network use or efficiency, especially if expressed as a function of population or employment (i.e. VMT per Resident). VMT tends to increase as land use density decreases and travel becomes more reliant on the use of the automobile due to the long distances between origins and destinations. VMT also serves as a proxy for impacts related to energy use, air pollution emissions, GHG emissions, safety, and roadway maintenance. The relationship between VMT and energy or emissions is based on fuel consumption. The traditional use of VMT in environmental impact analysis is to estimate mobile air pollution emissions, GHGs, and energy consumption.

3.2. Metrics and Methodology for Calculating VMT

Transportation VMT analysis for CEQA should be conducted using the SANDAG Regional Travel Demand Model. The model outputs can be used to produce VMT per Resident, VMT per Employee, Total VMT per Service Population, and Total VMT. Any other model used for VMT analysis shall be approved by PDS staff prior to submittal.

VMT per Resident

VMT per Resident is established by summing up total daily VMT generated by residents of a geographic area and dividing by the population of that geographic area. Total daily VMT includes all trip tours made by residents: home-based and non-home-based trip tours (i.e. all VMT for a resident for the entire day regardless of trip purpose or origin/destination).

To analyze the VMT per Resident for a proposed project, total daily VMT generated by project residents is divided by the project resident population.

SANDAG has a procedure to produce VMT per Resident; however, the SANDAG procedure to produce this metric only includes VMT generated within the SANDAG region by residents of the SANDAG region. To account for VMT generated by residents of the SANDAG region traveling outside of the region, the SANDAG model data must be appended with the VMT that occurs by SANDAG region residents outside of the region. The steps necessary to include VMT from all trips that enter or exit the SANDAG region are explained in the Trip Length Adjustment section below.

VMT per Employee

VMT per Employee is established by summing the total daily VMT generated by resident employees[1] of a geographic area and dividing by the number of employees of that geographic area. Total daily VMT

[1] Resident employees both live and work in the SANDAG region.

includes all trip tours made by employees, not just work-related trips (i.e. all VMT for a resident for the entire day regardless of trip purpose or origin/destination). Employees whose work location is specified as home are not included in the calculations. To analyze the VMT per Employee for a proposed project, the total daily VMT produced by the project's employees is divided by the total number of employees. The procedure developed by SANDAG to calculate VMT per Employee by TAZ only accounts for VMT generated within the SANDAG region by employees who are also residents of the SANDAG region. Employees that live outside of the region and travel into the SANDAG region for work are not accounted for because of the nature of the calculation.

VMT per Service Population

VMT per Service Population is established by dividing the total VMT with at least one trip end in a geographic area by the population plus employment of that geographic area. The total VMT includes all internal VMT, internal to external, and external to internal VMT (in other words all VMT regardless of geographic boundaries). Since this metric combines VMT for residents and employees and reflects how accessible all land uses are (for example, geographies with higher density, more shopping, and more jobs will have lower VMT per Service Population) it can be used to evaluate multiple types of projects. To analyze the VMT per Service Population for a proposed project, the project's total VMT is divided by the project population plus employment.

Total VMT (Origin-Destination Method)

The total VMT (origin-destination method) within a geographic area can be calculated directly from model outputs by multiplying the origin-destination (O-D) trip matrix by the final assignment skims (O-D Method VMT). The total VMT value should be appended to include VMT from all trips that enter or exit the SANDAG region, as explained in the Trip Length Adjustment section below.

Total VMT (Boundary Method)

Total daily VMT within a given area can be measured by multiplying the daily volume on every roadway segment by the length of every roadway segment within the area. This is called Boundary Method VMT. Examples of Boundary Method VMT are VMT within the SANDAG region, VMT within a defined planning area, or VMT within the market area to be served by the project.

Trip Length Adjustments

Trip length adjustments for trips leaving the SANDAG Model Area can be made by using the California Statewide Travel Demand Model (CSTDM).

Adjusting the length of trips leaving a model boundary requires appending extra distance at the model gateway zone (or external centroid) connectors. This process results in new gateway distances that are weighted based on the amount and location of external travel origins and destinations.

The first step of this process is to determine trip volume leaving or entering the model boundary. These are referred to as internal-to-external (IX) and external-to-internal (XI) trips. This data can be generated either from O-D trip matrices or by conducting a select zone analysis to track trips to the model gateways. The volume at the gateways for this purpose should not include external-to-external (XX) through trips.

Determining the full length of trips leaving or entering a model boundary requires an O-D dataset that includes flows between the model area and the area external to the model. The California Statewide Travel Demand Model (CSTDM) should be used to develop the O-D dataset.

The next step requires determining the gateway(s) based on the SANDAG model which trips from the O-D data source would travel through. The trip length adjustment process ultimately requires calculating the weighted average distance beyond each model gateway. The process of calculating trip lengths external to the SANDAG model region for trips entering or exiting the SANDAG model area using the CSTDM is described below:

- Create correspondence between Study Area TAZs within SANDAG model to the Statewide Model TAZs.
- Add "Gate" attribute to CSTDM roadway network links and set "Gate" equal to "gateway id" only for those links identified as the locations corresponding to the SANDAG model gateways.
- Add "Gate_Dist" attribute to CSTDM roadway network links and set "Gate_Dist" equal to the link distance for those links outside the SANDAG model boundary. All the CSTDM roadway links inside the SANDAG model boundary will have a "Gate_Dist" attribute of 0.
- Run a highway skim on the CSTDM roadway network to skim the shortest travel time between each O-D pair, tracking the gateway and distance outside the SANDAG model boundary.
- For each gateway, summarize the average distance beyond the SANDAG model boundary weighted by volume at each gateway.
- Tag the gateway distance from the above step using CSTDM to the gateways in the SANDAG model and multiply to the gateway volume from the SANDAG model to determine the gateway external VMT to the SANDAG model. Make sure not to double-count any overlap distance that's already accounted for in the VMT calculation from the SANDAG model.

Table 3 shows the base year (2012) weighted average distance beyond the SANDAG model boundary for trips passing through each model gateway, as calculated using the methodology above.

TABLE 3 – TRIP DISTANCES OUTSIDE SAN DIEGO COUNTY FOR ENTERING AND EXITING TRIPS

Gateway		Distance Outside San Diego County (miles)	
Route	County	IX Trips	XI Trips
I-8	Imperial	70.16	69.20
SR-78	Imperial	54.07	58.90
SR-79	Riverside	71.71	62.54
Pechanga Pkwy	Riverside	35.89	30.91
I-15	Riverside	24.86	24.81
I-5	Orange County	60.54	62.81

3.3. VMT Analysis for Land Use Projects

3.3.1. Screening Criteria for CEQA VMT Analysis

The requirements to prepare a detailed transportation VMT analysis apply to all land development projects, except those that meet at least one of the screening criteria. A project that meets at least one of the screening criteria below would have a less than significant VMT impact due to project characteristics and/or location.

1. *Projects Located in a VMT Efficient Area*

A VMT efficient area is any area with an average VMT per Resident, VMT per Employee, or VMT per Service Population 15 percent below the baseline average for the Unincorporated County. Land use projects may qualify for the use of VMT efficient area screening if the project can be reasonably expected to generate VMT per Resident, per Employee, or per Service Population, respectively, that is similar to the existing land uses in the VMT efficient area. Screening maps for each metric can be found in **Appendix C**.

Residential projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for residential projects is any area with an average VMT per Resident 15 percent below the baseline average for the Unincorporated County.

Employment projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for employment projects is any area with an average VMT per Employee 15 percent below the baseline average for the Unincorporated County.

Mixed-Use projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for mixed-use projects is any area with an average VMT per Service Population 15 percent below the baseline average for the Unincorporated County. Alternatively (or if a project is not screened out using the VMT per Service Population map), a project can screen each component of the mixed-use using the appropriate screening criteria for each land use.

Retail/Service projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for retail/service is any area with an average VMT per Service Population 15 percent below the baseline average for the Unincorporated County.

2. Small Residential and Employment Projects

Projects generating less than 110 daily vehicle trips (trips are based on the number of vehicle trips calculated using national ITE trip generation rates with any alternative modes/location-based adjustments are applied) may be presumed to have a less than significant impact absent substantial evidence to the contrary[2].

3. Projects Located in a Transit Accessible Area

Projects located within a half mile of an existing major transit stop or an existing stop along a high-quality transit corridor[3] may be presumed to have a less than significant impact absent substantial evidence to the contrary. Note that Sprinter stations are considered major transit stops. This presumption may not apply if the project:

- Has a Floor Area Ratio of less than 0.75.
- Includes more parking for use by residents, customers, or employees of the project than required by the County.
- Is inconsistent with SANDAG's most recent Sustainable Communities Strategy (SCS).
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

4. Locally Serving Retail/Service Projects

Local serving retail/service projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail/service generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel.

---

[2] For projects with varying trip generation on different days of the week it is appropriate to determine the average trip generation for purposes of determining if a project meets the small project screening criteria. Typically, land uses have consistent trip generation throughout the week or the majority of the week (for example, residential uses have similar levels of trip generation on weekdays and even on weekends, offices have consistent trip generation on weekdays, the majority of the days in a week). There are some project types that have varying trip generation throughout the week. The procedure for determining ADT would be to produce average daily trip generation accounting for the variance of trip generation throughout the week or month.

[3] Major transit stop: A site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (PRC § 21064.3). High quality transit corridor: A corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute periods (PRC § 21155).

5. Locally Serving Public Facilities and Other Uses

Public facilities that serve the surrounding community or public facilities that are passive use may be presumed to have a less than significant impact absent substantial evidence to the contrary. These do not include facilities or uses that would attract users from outside the vicinity of the use. The following are examples of locally serving facilities and uses:

- Transit centers
- Schools
- Libraries
- Post offices
- Park-and-ride lots
- Local health/medical clinics
- Law enforcement and fire facilities
- Local parks and trailheads
- Government offices
- Communication and utility buildings
- Water sanitation buildings
- Waste management buildings

6. Redevelopment Projects with Greater VMT Efficiency

Where a project replaces existing VMT-generating land uses, the project may be presumed to have a less than significant impact if the total project VMT is less than the existing land use's total VMT, absent substantial evidence to the contrary.

7. Affordable Housing

An affordable housing project may be presumed to have a less than significant impact absent substantial evidence to the contrary if 100 percent of units are affordable.

3.3.2. VMT Thresholds of Significance

Projects that do not meet the above screening criteria must include a detailed evaluation of the VMT produced by the project. The significance thresholds and specific VMT metric used to measure VMT are described by land use type below.

- **Residential**: 15 percent below the Unincorporated County average VMT per Resident.
- **Employment (Office/Commercial/Industrial)**: 15 percent below the Unincorporated County average VMT per Employee or 15 percent below the Unincorporated County average VMT per Service Population.
- **Retail/Service**: A net increase in total area VMT or 15 percent below the Unincorporated County average VMT per Service Population.
- **Mixed-Use**: 15 percent below the Unincorporated County average VMT per Service Population or each project component evaluated per the appropriate metric based on land use type (i.e. residential, office/commercial, and retail).
- **Regional Recreational**: A net increase in total regional VMT or 15 percent below the Unincorporated County average VMT per Service Population.

- **Regional Public Facilities**: A net increase in total regional VMT or 15 percent below the Unincorporated County average VMT per Service Population.
- **Other Project Types**: **Appendix D** provides a list with unique project types and identifies which land use category they fall within for analysis purposes.

For large land use plans, such as Specific Plans or Community Plan Updates the land use plan should be compared to the region overall. Comparison to the region is appropriate because large land use plans can have an effect on regional VMT (similar to how a regional retail project affects regional VMT). The following thresholds apply to large land use plans:

- **Residential:** Aggregate all residential land uses for the build-out year of the plan and compare the resulting build-out year VMT per Resident to the existing regional average. The threshold is 15 percent below the existing regional average VMT per Resident.
- **Employment:** Aggregate all employment land uses for the build-out year of the plan and compare the resulting build-out year VMT per Employee to the existing regional average. The threshold is 15 percent below the existing regional average VMT per Employee.
- **Retail/Service**: Evaluate the effect that adding these land uses has on regional VMT. The threshold is any increase in regional VMT.

3.3.3. VMT Analysis Procedures

For projects which meet one of the screening criteria for CEQA VMT analysis, no additional analysis is necessary. For projects that must provide a detailed evaluation of the VMT produced by the project, guidance is provided below on how to conduct transportation VMT analysis given the project type.

Project Type	Determine Average VMT by Maps	SANDAG Modelling Required
Residential, Employment, or Mixed-Use	Less than 2,400 un-adjusted driveway trips	Greater than 2,400 un-adjusted driveway trips
Non-Locally Serving Retail/Service, Public Facility, or Other	N/A	All Projects

1. Residential Projects

For projects that generate less than 2,400 daily unadjusted driveway trips (e.g. 240 or less single family residential units, 300 or less multi-family residential units, or 400 or less apartments): Identify the location of the project on the County's Resident VMT per Resident map. The project's VMT per Resident will be considered the same as the VMT per Resident of the TAZ it is located in. The project also has the option to use the SANDAG Regional Travel Demand Model (year that is used to determine the VMT thresholds) to determine the project's VMT per Resident.

For projects that generate greater than 2,400 daily unadjusted driveway trips: Input the project into the SANDAG Regional Travel Demand Model for SANDAG (year that is used to determine the VMT thresholds) to provide the project's VMT per Resident. To perform the analysis, all project land uses should be input, and the VMT per Resident should be determined using the same method/scripts that SANDAG utilizes to calculate the VMT per Resident metric.

2. Employment Projects

For projects that generate less than 2,400 daily unadjusted driveway trips: Identify the location of the project on the County's VMT per Employee map. The project's VMT per Employee will be considered the same as the VMT per Employee of the TAZ it is located in. The project also has the option to use the SANDAG Regional Travel Demand Model (year that is used to determine the VMT thresholds) to determine the project's VMT per Resident.

The project applicant may choose to substitute VMT per Service Population for VMT per Employee in the procedure described above.

For projects that generate greater than 2,400 daily unadjusted driveway trips: Input the project into the SANDAG Regional Travel Demand Model (year that is used to determine the VMT thresholds) for SANDAG to provide the project's VMT per Employee. To perform the analysis, all project land uses should be input, and the VMT per Employee should be determined using the same method/scripts that SANDAG utilizes to develop the VMT per Employee metric.

The project applicant may choose to substitute VMT per Service Population for VMT per Employee in the procedure described above. VMT per Service Population should be determined using the methodology described in Section 3.2.

3. Retail/Service Projects

Calculate the change to area VMT using the SANDAG Travel Demand Model. To calculate the change in area VMT, the regional retail component of the project should be input into the travel demand model (year that is used to determine the VMT thresholds). The "with project regional retail" area VMT produced by the model run is compared to the "no project" area VMT.

Alternatively, if the project applicant choses VMT per Service Population as their analysis metric, input the project into the SANDAG Regional Travel Demand Model for SANDAG to provide the project's VMT per Service Population. VMT per Service Population should be determined using the methodology described in Section 3.2.

4. Mixed Use Projects

For projects that generate less than 2,400 daily unadjusted driveway trips: Identify the location of the project on the County's VMT per Service Population map. The project's VMT per Service Population will be considered the same as the VMT per Service Population of the TAZ it is located in. The project also has the option to use the SANDAG Regional Travel Demand Model (year that is used to determine the VMT thresholds) to determine the project's VMT per Resident.

For projects that generate greater than 2,400 daily unadjusted driveway trips: Input the project into the SANDAG Regional Travel Demand Model for SANDAG to provide the project's VMT per Service Population. Compare back to the appropriate threshold to determine if the impact is significant.

All project land uses should be input, and the VMT per Service Population metric should be determined using the methodology described in Section 3.2,

OR, evaluate each individual project component per the appropriate metric based on land use type (i.e. residential, office/commercial, and retail) as described above.

5. *Other Project Types*

Input the project into the SANDAG Regional Travel Demand Model for SANDAG to provide the project's applicable VMT metric. To perform the analysis, all project land uses should be input, and the VMT metric that is appropriate based on the land use type should be determined using the methodology described in Section 3.2.

6. Apply VMT Reductions

If the project includes TDM measures, the reduction in VMT due to each measure shall be calculated and can be applied to the project analysis. There are several resources for determining the reduction in VMT due to TDM measures, such as the California Air Pollution Control Officers Association (CAPCOA) Quantifying GHG Mitigation Measures (2010) (Quantification Report) and the SANDAG Mobility Management Guidebook/VMT Reduction Calculator Tool (see Mitigation Section below).

The VMT reductions associated with project TDM should be applied to the appropriate metric(s) based on the project land uses. If the project does not include any TDM, then no reduction would be taken.

The resulting VMT values should be compared to the appropriate threshold in section 3.4 to determine whether the project results in a significant CEQA transportation impact due to VMT. Further information on VMT reduction and mitigation is provided in Section 3.5.

3.4. VMT Analysis for Transportation Projects

For transportation projects, any project that results in an increase in additional motor vehicle capacity (such as constructing a new roadway or adding additional vehicle travel lanes on an existing roadway) has the potential to increase vehicle travel, referred to as "induced vehicle travel."

Appendix E contains a list of transportation projects that, absent substantial evidence to the contrary, do not require an induced travel/VMT analysis since they typically do not cause substantial or measurable increases in VMT.

For all other projects, a VMT analysis must be done. To calculate the change in area (boundary method) VMT, the project should be input into the travel demand model. The "with project" area VMT produced by the model run is compared to the "no project" area VMT. A net increase in area VMT indicates that the project has a significant impact.

3.5. VMT Reduction and Mitigation Measures

To mitigate VMT impacts, the project applicant must reduce VMT, which can be done by either reducing the number of automobile trips generated by the project or by reducing the distance that people drive. The following strategies are available to achieve this:

1. Modify the project's site design and built physical characteristics to reduce VMT generated by the project.
2. Implement programmatic TDM measures to reduce VMT generated by the project.

Strategies that reduce single occupant automobile trips or reduce travel distances are called TDM strategies. There are several resources for determining the reduction in VMT due to TDM measures such as the CAPCOA Quantification Report and the SANDAG Mobility Management Guidebook/VMT Reduction Calculator Tool.

- CAPCOA Quantification Report
- SANDAG Mobility Management Guidebook/VMT Reduction Calculator Tool

The County is exploring programmatic options for addressing significant transportation VMT impacts such as a VMT Impact Fee Program, VMT Exchange, and/or a VMT Bank. These options would offer a regional approach for achieving VMT reductions and are briefly described as follows:

- VMT Impact Fee Program – This concept resembles a traditional impact fee program in compliance with the mitigation fee act and uses VMT as a metric. The nexus for the fee program would be a VMT reduction goal consistent with the CEQA threshold established by the County. The main difference from a fee program based on a metric such as vehicle LOS is that the VMT reduction nexus results in a capital improvement program (CIP) consisting largely of transit, bicycle, and pedestrian projects. These types of fee programs are recognized by case law as an acceptable form of CEQA mitigation if they can demonstrate that the CIP projects will be fully funded and implemented.
- VMT Exchanges – This concept (along with VMT banks) borrows mitigation approaches from other environmental analysis such as wetlands. The concept relies on an applicant agreeing to implement a predetermined VMT reducing project or proposing a new one in exchange for the ability to develop a VMT generating project. The mitigation projects may or may not be located near the applicant's project site. The concept requires a facilitating entity (such as the SANDAG or the County) to match the VMT generator (the development project) with the VMT reducing project and ensure through substantial evidence that the VMT reduction is valid. VMT Banks – This concept attempts to create a monetary value for VMT reduction (e.g., credits) such that an applicant could purchase VMT reduction credits. The money exchanged for credits could be applied to local, regional, or state level VMT reduction projects or actions. Like all VMT mitigation, substantial evidence would be necessary that the projects covered by the Bank would achieve expected VMT reductions and some form of monitoring may be required. This is more complicated than a simple exchange and would require more time and effort to set up and implement. The verification of how much VMT reduction is associated with each dollar or credit would be one of the more difficult parts of the program.

3.6. Cumulative VMT Impacts

Since VMT is a composite metric that will continue to be generated over time, a key consideration for cumulative scenarios is whether the rate of VMT generation gets better or worse in the long-term. If the rate is trending down over time consistent with expectations for air pollutant and GHGs, then the project level analysis may suffice. With the adoption of the CAP, the County identified strategies and measures to reduce the County's contribution of GHG emissions to the atmosphere to meet the State's 2020 and 2030 GHG emissions targets, and to demonstrate progress towards the 2050 GHG reduction goal; thus the VMT trend in the County can be considered downward.

For projects that require GPAs or are inconsistent with the General Plan, a cumulative VMT analysis is required. A project would result in a significant project-generated VMT impact under cumulative conditions if the applicable cumulative project-generated VMT thresholds are exceeded.

Measuring the ‘project’s effect on VMT’ is necessary especially under cumulative conditions to fully explain the project’s impact. A project effect on VMT under cumulative conditions would be considered significant if the cumulative link-level boundary VMT per Service Population (based on the Unincorporated County average) increases under the plus project condition compared to the no project condition.

Please note that the cumulative no project shall reflect the adopted RTP/SCS; as such, if a project is consistent with the regional RTP/SCS, then the cumulative impacts shall be considered less than significant.

4. Local Mobility Analysis

4.1. Local Mobility Analysis Overview

The authority for requiring non-CEQA transportation analysis and potentially requiring project improvement conditions to address identified deficiencies lies in the County's Site Plan review authority and General Plan policies to promote orderly development, promote public safety, and to ensure land development site planning and the needed infrastructure are adequate.

The LMA evaluates the effects of a proposed development project on traffic operations and safety for the roadway network in the proximate area of the project. The LMA will:

- Ensure that the local transportation system is adequate to serve the project and that improvements identified in the General Plan are constructed when needed consistent with the County's Public Road Standards.
- Address issues related to operations and safety for all transportation modes.
- Ensure consideration of the County's Active Transportation Plan for bicycle and pedestrian facilities.
- Identify the necessary transportation entitlement conditions for land development projects.
- Outline the County's screening criteria, study area and methodologies to assess the potential need for off-site transportation operation and safety improvements to the project study area roadway network.
- Establish measures of effectiveness to maintain transportation LOS consistent with the County's General Plan Mobility Element.
- Facilitate on-site project access and roadway frontage design infrastructure improvements to serve the project and the surrounding community.

4.2. LMA and General Plan Consistency

The LMA is intended to implement the County's General Plan by ensuring:

- A safe and efficient road network that balances regional travel needs with the travel requirements and preferences of local communities.
- Development projects to provide associated road improvements necessary to achieve a level of service of "D" or higher on all Mobility Element roads except for those where an unacceptable level of service has been accepted by the County.
- New or expanded transportation facilities that are phased with and equitably funded by the development that necessitates their construction.

- Roads are designed to be safe for all users and compatible with their context and consistent with County Public Road Standards.
- A multi-modal transportation system that provides for the safe, accessible, convenient, and efficient movement of people and goods.
- A public transit system that reduces automobile dependence and serves all segments of the population.
- Bicycle and pedestrian networks and facilities that provide safe, efficient, and attractive mobility options as well as recreational opportunities for County residents.
- A safe, scenic, interconnected, and enjoyable non-motorized multi-use trail system developed, managed, and maintained according to the County Trails Program, Regional Trails Plan, and the Community Trails Master Plan.

4.3. Determining Study Requirements

4.3.1. Screening Criteria

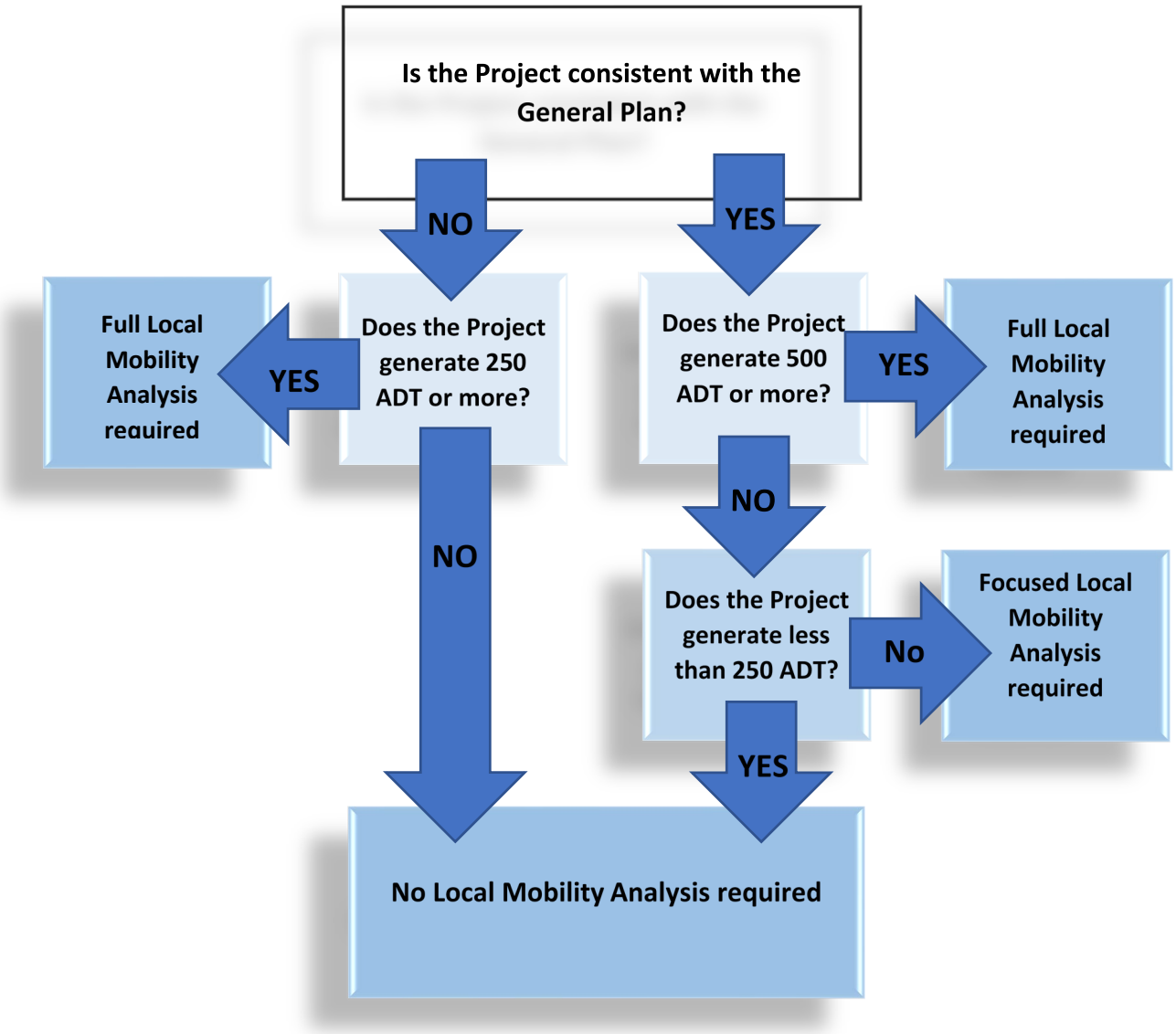
Discretionary projects may need to complete an LMA. The project's consistency with the General Plan and estimated daily trips will determine the type of LMA that is required based on Table 4.

TABLE 4 - DETERMINING LOCAL MOBILITY ANALYSIS TYPE

	Focused LMA	Full LMA
Consistent with General Plan	250-499 Daily Trips	500 or greater Daily Trips
Inconsistent with General Plan	N/A	250 or greater Daily Trips

For purposes of determining the LMA type, trips are based on the number of vehicle trips after any internal capture and alternative modes/location-based adjustments are applied but before adjustments for pass-by are taken.

FIGURE 3 - DETERMINING LOCAL MOBILITY ANALYSIS TYPE



4.4. Analysis Requirements

4.4.1. Study Area

The extents of the LMA study will be determined for each mode based on the LMA type and travel mode, as follows:

Vehicle

Determine the required study (Focused LMA or Full LMA) based on the consistency with the General Plan, forecasted daily project trips, and the criteria listed in Table 5.

TABLE 5 - EXTENT OF STUDY FOR VEHICLE (INTERSECTION) ANALYSIS

	Focused LMA	Full LMA
Land Use Consistent with General Plan	**250-499 Daily Trips** Site Access driveways and intersections that receive 50% or more of the total peak hour project generated trips (25 trip minimum) or have known operational concerns*	**500 or greater Daily Trips** Site Access driveways and intersections where at least 50 project peak hour trips are added or have known operational concerns (if the project does not contribute 50 peak hour trips total to any intersection, then the study intersections will be intersections that receive 50% or more of the total peak hour project generated trips)*
Land Use Inconsistent with General Plan	**N/A**	**250 or greater Daily Trips** Site Access driveways and intersections where at least 25 project peak hour trips are added or have known operational concerns*

For purposes of determining the LMA type, trips are based on the number of vehicle trips after any internal capture and alternative modes/location-based adjustments are applied but before adjustments for pass-by are taken. Study intersections for Focused and Full studies are determined by number of project trips at the intersection, or if the project creates safety or operational concerns identified in the Scoping Agreement.

*The number of intersections to be included for LMA will be identified in the Scoping Agreement.

For larger projects, a roadway segment assessment may be appropriate and requested by County staff.

Active Transportation

Assessment of pedestrian, bicycle, transit, and trail facilities will be identified in Scoping Agreement. Identification of potential active transportation improvements through the LMA could also be utilized in VMT mitigation where applicable.

Pedestrian:

Documentation of existing and planned pedestrian facilities and basic deficiencies (missing sidewalk, curb ramps, and major obstructions) within ¼-mile walking distance measured from each pedestrian access point (for example, driveways, internal project sidewalk connections to the street, etc.).

Bicycle:

Documentation of existing and planned bicycle facilities and basic deficiencies (bike lane gaps, obstructions) within one-mile bicycling distance measured from the center of the intersection formed by each project driveway.

Transit:

Identification of the closest transit routes and stops to the project within ¼ mile walking distance and documentation of amenities at existing transit stops (i.e. shelters, maps, benches, etc.).

Trails:

Documentation of all planned trails and pathways identified in the County's CTMP within ¼ mile of the project site.

4.4.2. Site Access and Circulation Evaluation Criteria

The LMA should address the following site-specific topics:

- Appropriate access management standards for median openings and spacing between major driveway connections.
- Potential sight distance problems.
- Potential pedestrian or bicycle conflicts.
- Relationship of internal circulation facilities to public streets.
- Sufficiency of driveway length at major entrances.
- On-site circulation as it impacts the public roadway system or access to public transportation and bicycle/pedestrian network.
- Potential for shared access among developments, including alternate access roads.

4.4.3. Data Collection and Study Periods

- Counts should be no more than two years old unless older counts are demonstrated to be still valid for Existing Conditions. Counts older than four years old must be updated.

- The LMA should provide tables and map figures of the traffic count data. Technical Appendices should include original traffic count data sheets.
- Traffic counts should typically be conducted during AM and PM peak periods on Tuesdays, Wednesdays, or Thursdays, unless approved by County staff. For typical commute hours, the peak hour will fall between 7:00-9:00 AM and 4:00-6:00 PM.
- Other peak hours, off-peak, or special event peak periods, may also be required depending on the project location and type of use. If the study necessitates a weekend analysis, Saturday from 11:00 AM to 1:00 PM will be the analyzed peak period.
- Traffic data should not be collected on weeks that include a holiday and non-school session time periods, unless approved by County staff.

4.4.4. Other Data Collection Considerations

Other considerations in data collection documentation and analysis should incorporate all applicable components that relate to the transportation network, which may include:

- Speed limits and average/85th percentile vehicle speed.
- Parking characteristics (on-street parking presence and type, bus stops).
- Signing (static, dynamic or variable) and pavement markings.
- School zone.
- Signal phasing and timing plans.
- Intersection control type.
- Right turn and left turn treatments.
- Railroad crossing location.
- Ramp metering.
- Pedestrian counts.
- Bicycle counts.
- Transit stops (type, frequency/schedule, dwell time, trip length, bus blockage).
- Roadway classification (functional class, rural/urban designation, access class, area type).
- Cross section elements (number, width and purpose of lanes, shoulder type and width, median type and width, pavement type and rating condition, cross slope, sidewalk, bicycle lane).
- Geometry (horizontal and vertical alignment, storage lengths, intersection/interchange configurations, auxiliary lanes).
- Pedestrian and bicycle accommodation.

- Transit (location, position, proportions with shelters and benches).
- Roadside (clear zone width, lateral clearance, driveway counts).

4.4.5. Study Scenarios

The following scenarios should be evaluated for the LMA:

- ***Existing Conditions:*** Existing traffic volumes. Document existing geometrics (i.e., roadway/intersection configurations, sight distance, turn lane storage, presence of closely spaced or offset driveways, etc.).

  Document existing traffic volumes and peak-hour levels of service in the study area.

- ***Opening Year Conditions***: The Opening Year (without project) traffic volumes should be derived by using an ambient growth factor applied to the existing traffic volumes. The proposed ambient growth factor should be submitted by the consultant and approved by County staff as part of the Scoping Agreement to determine the Opening Year conditions.

- ***Opening Year Plus Project****:* The project's generated traffic is added to the Opening Year Conditions to evaluate the *plus project* conditions.

- ***Phased Analysis*** (if necessary): For phased developments, include projections for the year that each phase of the development is planned to be complete. Forecast performance measures should be indicated both without and with the development in the year that each phase is planned to be complete. Either multi-phased development and/or construction phase especially if early phased development will overlap with construction activities.

- ***Build-out/Horizon Year:*** For General Plan Amendments (GPA), a General Plan Buildout/Horizon Year analysis (without and with the project) will be required. For GPAs, the LMA scope is expanded to identify potential new near-term and long-range traffic effects that were not previously identified in the Adopted General Plan analyses. The expanded GPA LMA includes a more comprehensive study area and a comparative Buildout assessment of the Adopted versus the Proposed GPA and the effects to the County's long-range Mobility Element roadway network.

4.4.6. Trip Generation

The applicant's consultant should identify the number of new daily and peak hour driveway vehicle-trips added by the project as described in this section.

Trip generation rates are commonly expressed in trips per unit of development - for example, trips per housing unit or trips per thousand square feet - and are derived by averaging trip generation data collected from existing land uses.

For San Diego County, the following trip generation sources should be used:

- The current edition of the Institute of Transportation Engineer's (ITE) Trip Generation Manual and Trip Generation Handbook. The Trip Generation Manual provides average trip generation rates and best-fit equations developed through regression analysis.

- For unique land uses, trip generation should be derived from local empirical data that includes trip generation samples from at least three (3) similar facilities. The facilities selected as samples should be approved by County Staff through Scoping Agreement prior to data collection.
- For existing facilities that are being expanded, trip generation should be determined by surveying the existing use to generate a project specific trip generation rate.
- The most detailed project information should be used to determine a project's trip generation estimate. For example, if the project's building square footage and the project acreage are both known, the building square footage is more detailed; therefore, should be used to estimate the trip generation.

4.4.7. Trip Reductions

Reasonable reductions to trip rates may also be considered, including:

Internal Capture

For mixed-use projects it is appropriate to estimate the interaction between the project uses. For example, for a project that has retail, residential, and office, with compatible supporting land uses within a ¼ mile walking distance, trip reductions may be used. Most trip generation data is for stand-alone, single land uses and does not account for the interaction between land uses for a mixed-use project.

Trip internalization for mixed-use developments (if applicable) should be calculated using state of the practice methodologies. The ITE Trip Generation Handbook provides a procedure for calculating internal trips for mixed-use projects. SANDAG's mixed-use trip generation or (MXD) methodology may also be considered. The applicant's consultant may also propose a method for determining adjustments to trip generation for mixed-use projects, with approval from County staff through the Scoping Agreement.

Trip generation adjustments to account for internal capture should be applied to the raw trip generation calculated for each land use.

Alternative Modes

Most trip generation data is based on suburban locations with primarily auto trips. Transit, bicycling, and walking is not generally captured in the trip generation data. For projects that will have alternative modes, transit use, bicycling, and walking must be specifically acknowledged to reduce the trip generation (after the internal capture step).

Accounting for alternative modes includes considerations for project proposed (or required) TDM measures. Consultant should propose the alternative modes reduction factor for the project to be reviewed and approved by County staff identified in the Scoping Agreement.

SANDAG trip reduction factors may also be considered for developments within ¼ mile walking distance to a local transit station.

Pass-By & Diverted Trips

Properly estimating the number of pass-by trips is important because even though pass-by trips do not add extra trips to the surrounding roadway system, such trips impact the traffic at the driveways and all the turning movements expected at these driveways. The percentage of pass-by and diverted link trips should be estimated based on data provided by ITE or actual surveys of similar land uses. The pass-by reduction should not exceed 10% of the adjacent street volume.

Typically, pass-by trips will not be added to the study intersections (except for accounting for them at project driveways). Typically, diverted link trips are added to all study intersections along with the net new project trips, unless there is specific justification to demonstrate where the trips are diverting from.

Credit for Existing Uses

For redevelopment projects, it may be appropriate to apply a “trip credit” to account for vehicle trips being generated by an existing use that will be redeveloped. The existing use should be operating at the time of data collection, and traffic counts should be performed to determine the appropriate trip credit. The “trip credit” should be applied after internal capture and alternative modes are accounted for.

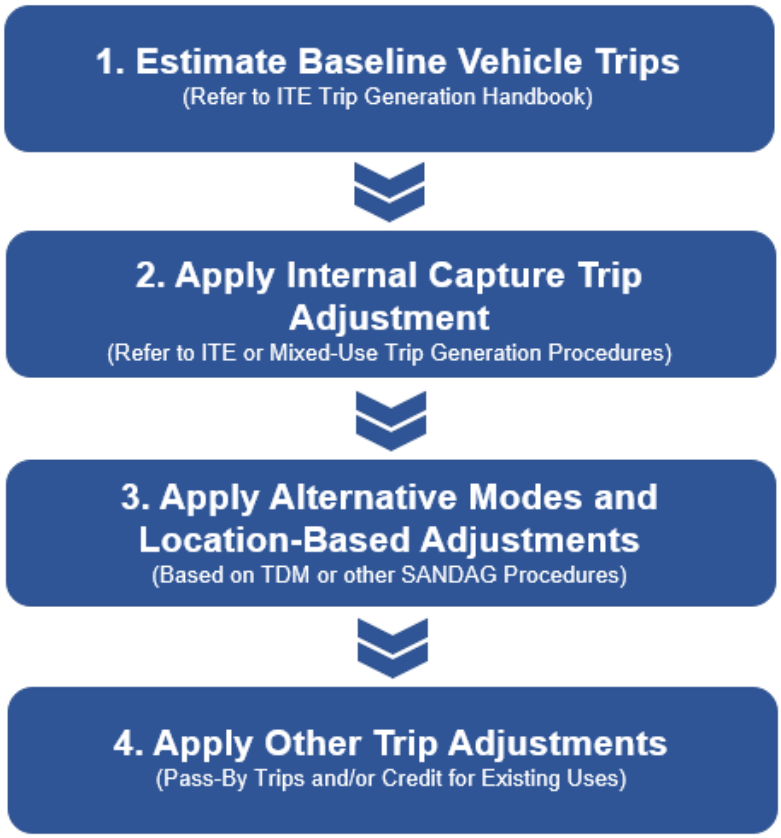
Truck Traffic

For projects that anticipate the generation of significant truck traffic (typically a project that that estimates that truck traffic will account for 25% or more of the total project trip generation), all truck trips should be converted to passenger car equivalents (PCE) for the capacity analysis. Typically, the PCE that should be applied is 2.5 passenger cars for each truck trip.

Other Jurisdictions

Caltrans or adjacent jurisdictions may use different trip reduction rates. Early consultation with reviewing agencies is strongly recommended and must be documented in the Scoping Agreement.

FIGURE 4 - PROJECT TRIP GENERATION FLOW CHART



4.4.8. Trip Distribution

The following describes the procedure for assigning project trips to the roadway network. Trip distribution can be determined from zip code data, census data, market research, travel demand models, existing travel patterns, and/or the locations of complementary land uses, and professional engineering judgment. Trip distribution assumptions should be consistent for developments of the same use in the same areas. Trip distribution for the County can be estimated using two methods:

- Manual estimation using procedures described above for existing traffic volumes, location of complementary land uses, and engineering judgement. The trip distribution should be clearly communicated on a map that shows the percent of project traffic on each roadway in the vicinity of the project site. Manual estimation is appropriate for projects performing a Site Access Study, Focused LMA, or project's that generate less than 1,000 daily trips.
- Use the current version of the SANDAG Regional Travel Demand Model to perform a select zone analysis. The SANDAG Regional Travel Demand Model should be used to determine the trip distribution for projects that generate 1,000 or greater daily trips.

A preliminary trip distribution pattern should be submitted with the Scoping Agreement for County staff review.

4.5. LMA Methodology

4.5.1. Signalized Intersections Methodology

Traffic operational impacts at signalized intersections should be analyzed using standard or state-of-the-practice procedures such as Highway Capacity Manual (HCM) analysis. At isolated intersections that are not heavily congested, deterministic methods that apply HCM equations for each intersection in isolation can be used. HCM 6th Edition is the latest version which reflects current state-of-the-practice methodology. There are several software packages that use deterministic methods such as Synchro, Vistro (previously Traffix), and Highway Capacity Software. The HCM methodology assigns a LOS grade to an intersection based on estimated delay.

For intersections that are closely spaced, have a unique geometry, or are part of a congested corridor, micro-simulation analysis should be performed. Micro-simulation can more accurately evaluate intersections with unique characteristics or in congested systems because the method accounts for how intersections within a system interact with one another. For example, if a vehicle queue extends from an intersection and blocks a different intersection, micro-simulation will account for that condition, whereas deterministic methods will not. Micro-simulation should also be considered when determining required turn lane storage if the analyst believes deterministic methods are not producing reasonable maximum or 95th percentile queue lengths. There are several micro-simulation software packages such as SimTraffic (which is a module of Synchro) and Vissim.

It is recommended that the methodology and software proposed for use is coordinated with County staff as part of the Scoping Agreement process. County staff may also request the consultant provide micro-simulation electronic files for review.

The following provides general guidelines for the parameters necessary to perform the analysis. For evaluating existing and project buildout conditions within five years of commencement of the LMA, the parameters should generally be based on field measurements taken during traffic data collection or field observation. For new study intersections or to analyze a buildout year that is beyond five years of commencement of the LMA, the guidelines in **Table 6** can be used to determine input parameters.

TABLE 6 - SIGNALIZED INTERSECTIONS PARAMETERS

Parameter	Guidance
Intersection Delay	Average intersection delay (and associated HCM level of service) should be reported for signalized intersections.
Peak Hour Factor (PHF)	Use the measured PHF by intersection approach that is obtained during traffic data collection. For new intersections or to analyze conditions beyond five years of commencing the LMA, refer to the HCM and maintain consistency across analysis periods, scenarios, and intersections.
Saturation Flow Rate	Use typical saturation flow rate presented in the HCM. The current typical saturation flow rate is 1,800 vehicles per hour per lane.

Signal Timing	Obtain signal timing plans from the appropriate agency and use the timing (by time of day if provided) for the analysis. For new traffic signals use a maximum cycle length of 120 seconds for intersections near freeway interchanges or at the intersection of two arterial roadways. For all other conditions use a maximum of 90 seconds. For all conditions, ensure that the minimum pedestrian crossing times are utilized.
Conflicting Pedestrians and Pedestrian Calls	Use pedestrian count data if available. If not available refer to the HCM for appropriate minimum values.
Heavy Truck Percentage	If available, use observed values from field observations or traffic counts. If unavailable, the minimum recommended value is 3%. Heavy truck percentages should be higher on truck routes.
Lane Utilization Factor	If applicable, adjust the lane utilization factor based on field observations. Otherwise, refer to the HCM.
Queue & Storage Analysis	HCM should be utilized to compare turn volumes with the length of available storage.

An improvement is required at a signalized intersection if any of the following are triggered:

- Consistent with County General Plan Policy, any intersection that is operating at an acceptable LOS or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F should identify improvements to improve operations to LOS D or better.
- Any signalized study intersection that is operating at LOS E or F without project traffic where the project increased delay by 5.0 or more seconds should identify improvements to offset the increase in delay.
- If the left turn volume exceeds 100 vehicles per hour, an exclusive left turn lane is recommended.
- If the left turn volume exceeds 150 vehicles per hour and posted speed 45 mph or greater, a protected left turn signal phase is recommended.
- If the left turn volume exceeds 300 vehicles per hour, a second left turn lane is recommended.
- If the right turn volume exceeds 150 vehicles per hour, a dedicated right turn lane is recommended.
- The project causes the 95th percentile queue at a turn lane to exceed the existing turn lane length/storage.

The following types of typical improvements for signalized intersections:

- Addition of left or right turn lanes.
- Lengthening a turn lane.
- Signal timing/phasing/coordination/equipment improvements or transportation system management (TSM).
- ADA signal accessible improvements.
- The County may also require upgrades to meet current design standards or better accommodate pedestrian and bicycle mobility consistent with the County Active Transportation Plan.

4.5.2. Unsignalized Intersections Methodology

Traffic operational impacts at unsignalized intersections (all-way stop, side-street stop, and roundabout intersections) should be analyzed using standard or state-of-the-practice procedures consistent with acceptable LOS as outlined in the County General Plan. The software packages and methods described for signalized intersections also apply to stop controlled intersections.

All-way stop intersections and roundabouts should be reported for the entire intersection average value.

Minor side-street stop intersections should be reported for the worst-case movement.

An improvement is required at side street stop unsignalized intersection if:

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- If the worst-case movement is currently operating at LOS E or F:
    - The project adds 5 or more seconds of *overall intersection.*

      AND

    - The project adds ten (10) or more trips to the worst-case movement OR 50 or more trips to the overall intersection.
- The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the *California Manual on Uniform Traffic Control Devices* (CA MUTCD–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right turn in/right turn out only intersections or driveways that are physically restricted by raised center median.

An improvement is required at all-way stop and roundabout unsignalized intersection if:

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- The project adds 5 or more seconds of delay to an intersection that is currently operating at LOS E or F during the peak hour.

- The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the *California Manual on Uniform Traffic Control Devices* (CA MUTCD–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right turn in/right turn out only intersections or driveways that are physically restricted by raised center median.

The following types of typical improvements improve operations for unsignalized intersections:

- Install All-Way Stop Control.
- Install Two-Way Stop Control.
- Provide Left Turn Lane.
- Provide Right Turn Lane.
- Install Bypass Lane.
- Install Center Acceleration Lane.
- Install new traffic control device (Perform intersection control evaluation (ICE), see below).
- The County may also require upgrades to meet current design standards or better accommodate pedestrian and bicycle mobility consistent with the County ATP.

4.5.3. Intersection Control Evaluation (ICE)

The selection of the appropriate intersection control evaluation (ICE) should be guided by performance-based evaluations that objectively consider the range of project solutions and control strategies for a given project context. Traffic operations and safety performance are key inputs into the ICE framework. Consistent with the California MUTCD, the County of San Diego recognizes the roundabout as a standard form of intersection control. Roundabouts can provide increased efficiency of operations and enhanced safety. Should a project recommend the construction of a new signalized intersection or control measure, the County recommends the intersection be further analyzed using Caltrans ICE methodology. If the analysis screening indicates that a roundabout should be evaluated, the analysis should be conducted using one of the following methodologies: SIDRA or RODEL. These models are consistent with HCM 2010 and HCM Edition 6 models.

There are various reference and informational guides that discuss applications, designs, and performance characteristics of different intersection types and control strategies are available to support screening, analyzing and designing roundabouts.

https://safety.fhwa.dot.gov/intersection/ice/fhwasa18076/fhwasa18076.pdf

https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/

https://dot.ca.gov/programs/traffic-operations/intersection-evaluation-control

It is recommended that early consultation occur with County staff when the Transportation Study determines the need for a new intersection control measure. A roundabout option should be screened

early in the draft Transportation Study. During this process, the applicant's consultant may request a meeting with County staff to clarify study requirements or comments received on the draft study related to the need to conduct an ICE study.

4.5.4. Roadway Segments Methodology

Intersections are typically the constraint when analyzing traffic operations. However, in some cases for larger projects, a roadway segment assessment may be appropriate and requested by County staff.

Roadway segment analysis should be performed using thresholds from the latest HCM methodology that reflects the current state-of-the-practice. The HCM methodology assigns a LOS grade to the roadway segment and is evaluated based on acceptable LOS as identified in the County General Plan and Public Road Standards based on facility classification type.

https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch3.1.8/2014-12-19_CountyofSanDiego2012_PublicRoadStandards.pdf

4.5.5. Site Access, Safety, and Other Analyses

The proper application of access management and basic site planning principles is essential to all transportation analysis. The design of site circulation, parking, and access should also easily accommodate bus and pedestrian movements. The following factors should be considered when evaluating existing and/or post-project traffic conditions to address identified traffic operations and safety concerns:

1. Intersection phasing and queuing
2. Inadequate weaving distance with increasing traffic volumes
3. Inadequate deceleration length with increasing traffic volumes
4. Speed differentials from vehicles slowing or stopping
5. Inadequate decision sight distance
6. Access management
7. Driveway location and design
8. Bicycle, pedestrian and transit accessibility

TABLE 7 - SAFETY TREATMENTS BY FACILITY TYPE

Facility Type	Treatment
Freeways	Ensure intersection and freeway ramps capacity and storage don't spill onto local roadways
Roadways	Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or otherwise to improve safety
Intersections	Addition of through lane(s), right turn lane(s) and left turn lane(s)
	Left and/or right turn lane pocket length (queue length)
	Intersection control measures and coordination (stop control, signal, roundabout)
	Intersection geometrics for heavy vehicle traffic (e.g. curb returns)
Driveways	Sight distance
	Driveway length and gated entrances
	Corner clearance
	Number or driveways
Access Management	Raised median and two-way-left-turn lanes
	Sight distance improvements
	Access and signal spacing
	Gap analysis
Complete Streets - Bicycle, Pedestrian & Transit	Infrastructure
	Accessibility
	Bus turnouts
Parking	Parking plans and restrictions
Traffic Calming	Vertical deflections (speed humps, speed tables, and raised intersections), horizontal shifts, roadway narrowing, etc.

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 grading, potential haul routes, traffic control plans and street closure.

Active Transportation Assessment

The County of San Diego's Active Transportation Plan (ATP) is a multi-objective plan that balances environmental, economic, and community interests; implements the County's General Plan; and aligns with multiple County initiatives. The ATP identifies goals, objectives, and actions related to improving safety to reduce auto collisions with cyclists and pedestrians, increasing accessibility and connectivity with an active transportation network, and improving public health by encouraging walking and biking.

The pedestrian, bicycle, and trail facilities assessment is intended to determine a project's potential effect on Active Transportation facilities in the vicinity of the proposed project. The deficiencies could be *physical*, through removal or modification of existing facilities. The deficiencies could also be based on *demand* if the project is adding bicycle and pedestrian trips to inadequate facilities.

https://www.sandiegocounty.gov/content/sdc/pds/advance/ActiveTransportationPlan.html

Pedestrian: Documentation of existing and planned pedestrian facilities and basic deficiencies (missing sidewalk, curb ramps, and major obstructions) within ¼-mile walking distance measured from each pedestrian access point (for example, driveways, internal project sidewalk connections to the street, etc.).

The project should construct sidewalks to close sidewalk gaps adjacent to the project site.

The project should remove sidewalk obstructions that limit the pedestrian access route to less than four feet adjacent to the project site.

The project should construct curb ramps/meet accessibility standards for any intersections adjacent to the project site.

The project can consider adding traffic calming and pedestrian related signal timing changes (leading pedestrian interval signal timing) to accommodate an increase in pedestrian demand on roadways and intersections adjacent to the project site.

Bicycle: Documentation of bicycle facilities and basic deficiencies (bike lane gaps, obstructions) within ½ mile bicycling distance measured from the center of the intersection formed by each project driveway.

The project should construct (or preserve space for) any planned bicycle facility per the County's Active Transportation.

The project could consider upgrading adjacent bicycle facilities by adding upgraded treatments (such as green bike lane paint, buffers, etc. where appropriate) to accommodate an increase in bicycle demand.

The project should construct any planned bicycle facilities adjacent to the project frontage to be consistent with the County's Mobility Element and Active Transportation Plan.

Trails: The County Trails Program will be utilized to develop a system of interconnected regional and community trails and pathways. These trails and pathways are intended to address an established public need for recreation and transportation but will also provide health and quality of life benefits associated with hiking, mountain biking, and horseback riding throughout the County's biologically diverse environments. The County Trails Program involves both trail development and management on public, semi-public, and private lands.

https://www.sandiegocounty.gov/content/sdc/pds/community-trails-master-plan.html

Documentation of all planned trails and pathways identified in the County's CTMP within ¼ mile of the project site.

The project should construct any planned pathways along the project's frontage to be consistent with the County's Mobility Element and CTMP.

Documentation of all planned or existing trails that bisect any portion of the project's parcel(s).

For project parcels that include a planned trail, early coordination with County Trails Staff is strongly encouraged to determine trail alignment and any potential easements that may be requested or required.

County Design Exception Request (DER) Process

The LMAs should identify and provide a brief summary of proposed and approved DERs. The LMAs should contain a reference to the detailed design exception documentation (separate documents that are included in LMA Technical Appendices).

Fire/Emergency Services

LMAs for large residential projects (over 50 units/500 ADT) and non-conforming GPA projects should provide a high-level discussion regarding secondary/emergency access and emergency evacuation planning with the local Fire District and emergency service agencies. The LMA should include a reference to supporting project documentation that addresses secondary/emergency access and emergency evacuation planning in a more comprehensive manner.

Appendix A: Scoping Agreement for Transportation Studies

This page intentionally left blank

General Project Information and Description

Project Information

Project Name:
Project PDS Number:
Project Location:

Project Description

Land Uses and Intensities:
Gross and Developable Acreage:
Number of Vehicle Parking Spaces:
Bicycle Storage Capacity:
Motorcycle Spaces:

Consultant

Name of Firm:
Project Manager:
Address:
Telephone:

Trip Generation

Source:	**Pass-by Trips:**
Total Daily Trips:	**Diverted Trips:**
Internal Capture Rate:	**Trip Credit:**
Alternative Modes:	**Net Daily Trips:**

General Plan Consistency

Is this project consistent with the General Plan? ☐ **Yes** ☐ **No**

Site Plan

Attach 11x17 copies of the project location/vicinity map and site plan containing the following:

- Driveway locations and access type
- Pedestrian access, bicycle access, and on-site pedestrian circulation
- Location and distance to closest existing transit stop (measure as walking distance to project entrance or middle of parcel
- Location of any planned trails identified in the Community Trails Master Plan (CTMP) within ¼ mile of the project location

CEQA Transportation Analysis Screening

Project Type Screening

1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project *(if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)*	Screened Out Yes	Not Screened Out No
☑ **1. Small Projects:**		
a. Does the project result in 110 daily trips or less?	☐	☑
☐ **2. Small Service/Retail Project:**		
a. Is the project less than 50,000 square feet?	☐	☐
☐ **3. Mixed-Use Project:**		
a. Is the project location screened out based on the SANDAG screening map for VMT/service population?	☐	☐
☐ **4. Locally Serving Retail/Public Facility/Recreational**		
a. Is the project locally serving: Retail OR Public Facility OR Recreational?	☐	☐
☐ **5. Redevelopment Project:**		
a. Does the project result in a net decrease in total Project VMT than the existing use?	☐	☐
b. If the project is to redevelop an affordable housing site, are all proposed units affordable housing units? Mark "No" for projects that replace affordable housing with market rate units	☐	☐

Project Location Screening (if not screened based on project type) – Part 1

Is this project located within a grey area (area with little to no existing land use) on the applicable County screening maps for the project land use type?	☐ **Yes**	☐ **No**

If "yes", the project cannot be screened based on location. If "No", proceed to Part 2.

Project Location Screening (if not screened based on project type) – Part 2

1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project *(if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)*	Screened Out Yes	Not Screened Out No
☐ **1. Residential**		
a. Is the project location screened out using the County screening maps for VMT/resident?	☑	☐
☐ **2. Employment**		
a. Is the project location screened out using the County screening maps for VMT/employee or VMT/service population?	☐	☐
☐ **3. Retail/Public Facility/Recreational**		
a. Is the project location screened out using the County screening maps for VMT/service population?	☐	☐

Local Mobility Analysis

Type of Local Mobility Analysis (LMA)

☐ **Site Access Study**	249 daily trips or less
☐ **Focused LMA**	250 to 499 daily trips and consistent with the General Plan
☐ **Full LMA**	500 or greater daily trips and consistent with the General Plan, or 250 or greater daily trips and inconsistent with the General Plan

Trip Distribution

☐ **Select Zone (Model Series_____)**	Projects that generate greater than 1,000 daily trips
☐ **Manual Estimation**	Site Access Studies, Focused LMAs, or project's that generate less than 1,000 daily trips

Provide exhibit detailing trip distribution and trip assignment for review.

Study Intersections (and Roadway Segments) **(NOTE: Subject to change based of staff review)**

1.	**6.**
2.	**7.**
3.	**8.**
4.	**9.**
5.	**10.**

Attach a separate page if the number of study locations exceeds 10.

Other Jurisdictions

Is this project located within one mile of another Local Jurisdiction? ☐ **Yes** ☐ **No**

If so, name of Jurisdiction:

Specific Issues to be addressed within the Study

(in addition to requirements described in the Guidelines – to be filled out by County Staff)

1.
2.
3.
4.
5.

Recommended by:

Consultant's Representative	Date
Scoping Agreement Submitted on	Date
Scoping Agreement Re-submitted on	Date

Approved Scoping Agreement:

County of San Diego Transportation Specialist	Date

Appendix B: Transportation Study Format

This page intentionally left blank

Transportation Study Format Outline

The outline below provides organizational guidance for the various sections of a typical transportation study. When a project is screened from CEQA VMT analysis or local mobility analysis, the section is not required in the transportation study.

COVER PAGE

TABLE OF CONTENTS (Including a list of tables, maps, and figures)

GLOSSARY OF TERMS AND ACRONYMS

EXECUTIVE SUMMARY

a) Table summarizing CEQA impacts and mitigation measures.
b) Table summarizing LMA findings and proposed improvements.

INTRODUCTION

1.0 Project and Study Description.
- 1.1 Purpose of the Transportation Study.
- 1.2 Project location and vicinity map (Exhibit).
- 1.3 Project size and description.
- 1.4 Existing and proposed land-use and zoning.
- 1.5 Site plan and proposed project (Exhibit).
- 1.6 Proposed project opening year and analysis scenarios.

CEQA VMT ANALYSIS

2.0 Project VMT per capita, per employee, and/or per service population for all analysis scenarios.
3.0 Project effect on VMT for all analysis scenarios.
4.0 Identification of VMT impacts.
5.0 Proposed VMT mitigation measures.

LOCAL MOBILITY ANALYSIS

6.0 Methodology and Thresholds.
7.0 Existing Conditions.
- 7.1 Existing roadway network.
- 7.2 Existing traffic control and intersection geometrics (Exhibit).
- 7.3 Existing traffic volumes – AM and PM peak hour and ADT (Exhibit).
- 7.4 Existing level of service (LOS) at intersections (Table).
- 7.5 Existing bicycle facilities (Exhibit).
- 7.6 Existing pedestrian and trail facilities (Exhibit).
- 7.7 Existing transit facilities (Exhibit).

8.0 Project Traffic.
- 8.1 Trip generation (Table).
- 8.2 Trip distribution and assignment (Exhibit).
- 8.3 Project AM and PM peak hour turning movement volumes (Exhibit).

9.0 Opening Year Analysis.

9.1 Opening Year No Project Analysis.
9.1.1 AM and PM peak hour turning movement volumes (Exhibit).
9.1.2 Intersection level of service (Table).
9.2 Opening Year Plus Project Analysis.
9.2.1 AM and PM peak hour turning movement volumes (Exhibit).
9.2.2 Intersection level of service (Table).
9.2.3 Identification of intersection deficiencies and improvements.

10.0 Phased Year Analysis (if necessary).
10.1 Project phase description (including construction overlap) and projections.
10.2 Phased Year No Project Analysis.
10.2.1 AM and PM peak hour turning movement volumes (Exhibit).
10.2.2 Intersection level of service (Table).
10.3 Phased Year With Project Analysis.
10.3.1 AM and PM peak hour turning movement volumes (Exhibit).
10.3.2 Intersection level of service (Table).
10.3.3 Identification of intersection deficiencies and improvements.

11.0 Build-out/Horizon Year Analysis (for GPAs only).
11.1 Build-out/Horizon Year No Project Analysis.
11.1.1 AM and PM peak hour turning movements volumes (Exhibit).
11.1.2 Intersection level of service (Table).
11.2 Build-out/Horizon Year Plus Project Analysis.
11.2.1 AM and PM peak hour turning movement volumes (Exhibit).
11.2.2 Intersection level of service (Table).
11.2.3 Identification of intersection deficiencies and improvements.

12.0 Traffic Signal Warrant Analysis.

13.0 Site Access Analysis.

14.0 Safety and Operation Improvement Analysis.

15.0 Active Transportation Analysis.
15.1 Pedestrian Analysis.
15.1.1 Existing and planned facilities (Exhibit).
15.1.2 Deficiencies.
15.1.3 Proposed improvements.
15.2 Bicycle Analysis.
15.2.1 Existing and planned facilities (Exhibit).
15.2.2 Deficiencies
15.2.3 Proposed improvements.
15.3 Trails.
15.3.1 Existing and planned facilities (Exhibit).
15.3.2 Proposed improvements.

16.0 Improvements and Recommendations.
16.1 Proposed improvements at intersections.
16.2 Proposed improvements at roadway segments.

16.3 Recommended improvements categorized by whether they are included in a fee plan or not (identify if these improvements are included in an adopted fee program).

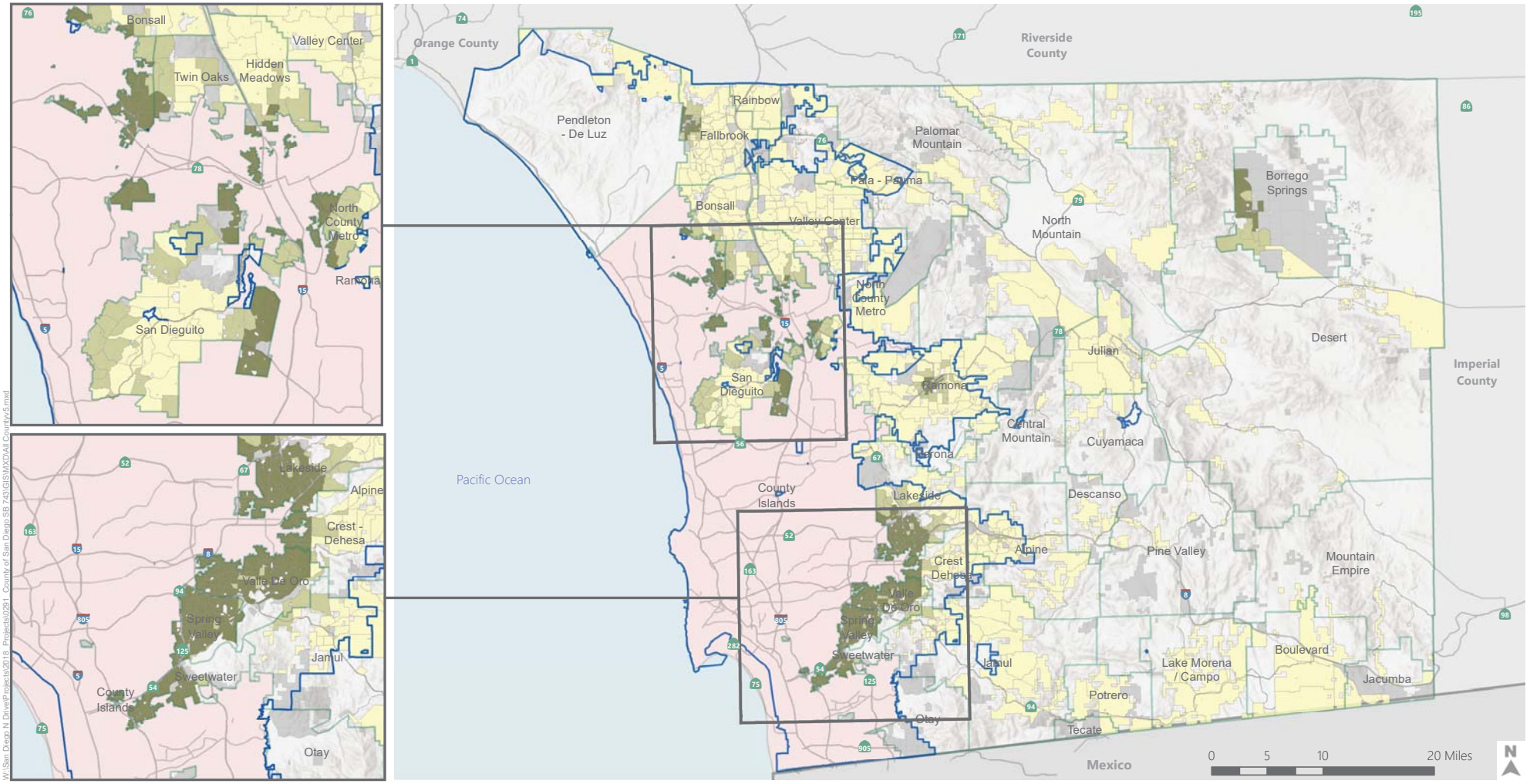
APPENDIX

A. Approved scoping agreement.
B. Traffic counts.
C. Intersection analysis worksheets.
D. VMT and TDM calculations.
E. VMT and TDM mitigation calculations.
F. Signal warrant worksheets.

This page intentionally left blank

Appendix C: VMT Efficient Area Screening Maps

This page intentionally left blank



W:\San Diego N Drive\Projects\2018_Projects\0291_County of San Diego SB 743\GIS\MXD\All Country\5.mxd

Legend

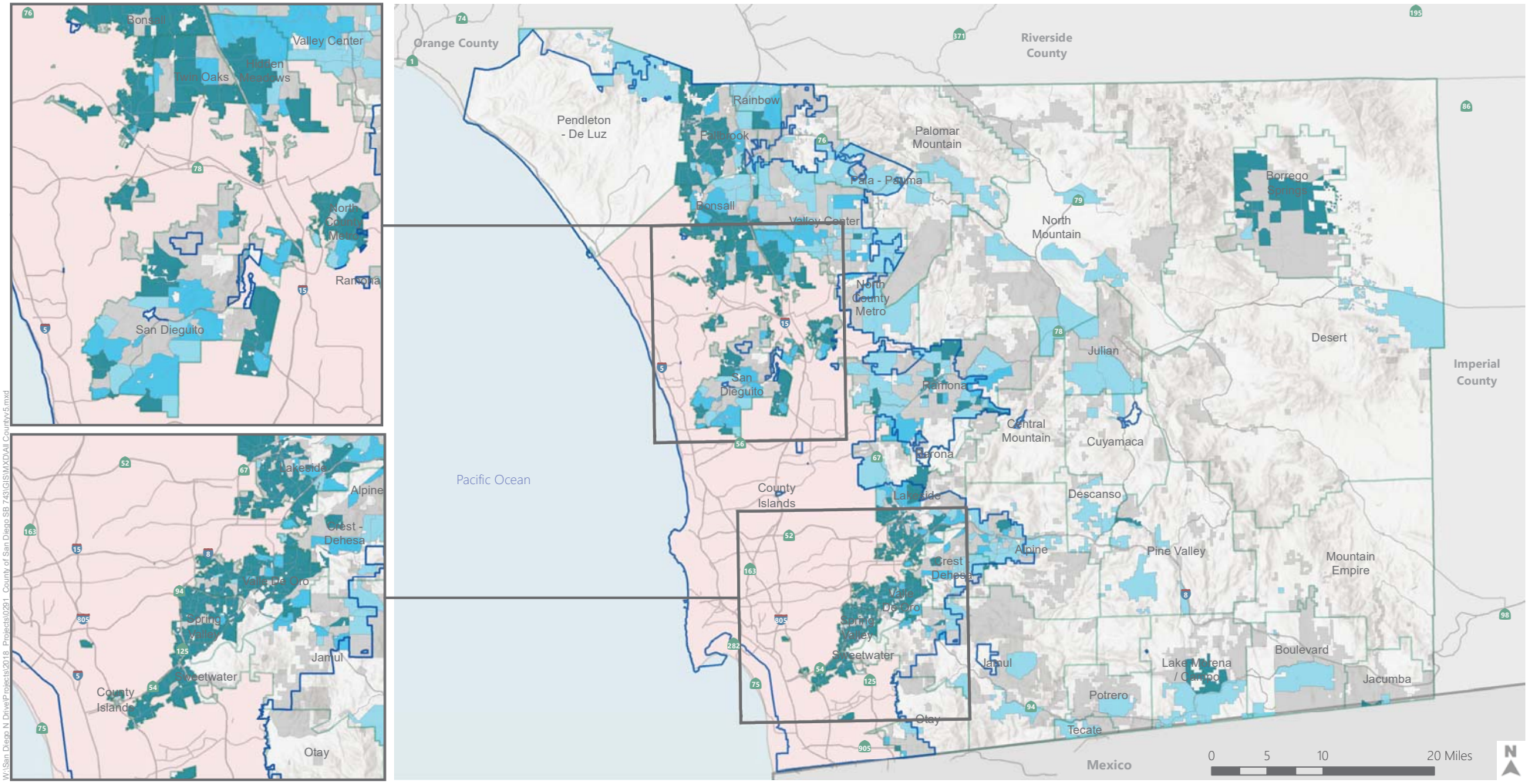
- At least 15% below the Unincorporated County Average
- 0% to 15% below the Unincorporated County Average
- Above the Unincorporated County Average
- Areas with insufficient data to determine average VMT
- San Diego County Incorporated Cities
- Community Plan Area
- County Water Authority Boundary

Unincorporated County Average = 32.54 Vehicle Miles Traveled/Resident

San Diego County VMT Per Resident by TAZ Relative to Unincorporated County Average*

*Based on the SANDAG Series 13 Base Year Model

May 1, 2020



Legend

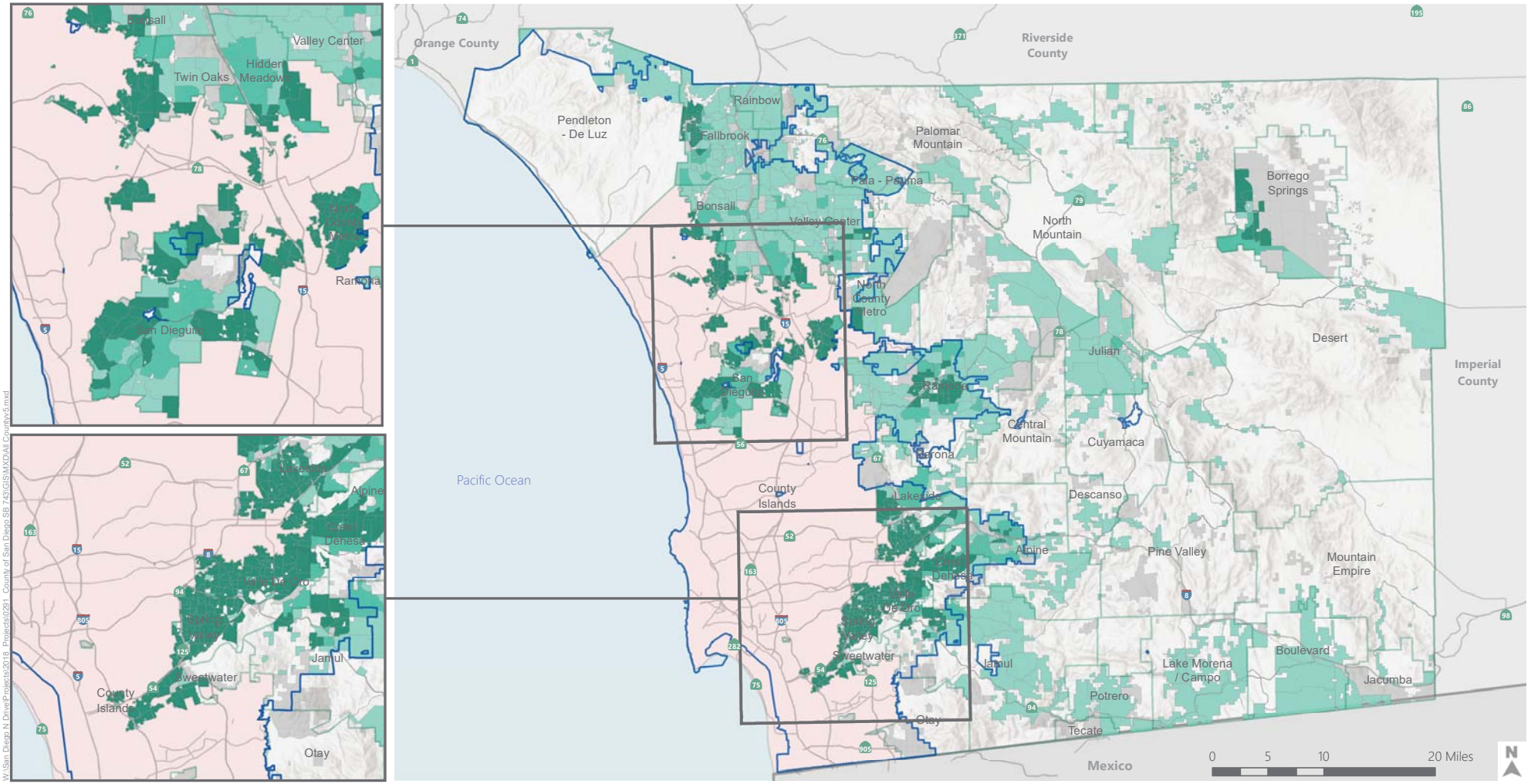
- At least 15% below the Unincorporated County Average
- 0% to 15% below the Unincorporated County Average
- Above the Unincorporated County Average
- Areas with insufficient data to determine average VMT
- San Diego County Incorporated Cities
- Community Plan Area
- County Water Authority Boundary

Unincorporated County Average = 37.55 Vehicle Miles Traveled/Employee

San Diego County VMT Per Employee by TAZ Relative to Unincorporated County Average*

*Based on the SANDAG Series 13 Base Year Model

May 1, 2020



W:\San Diego N Drive\Projects\2018 Projects\0291 County of San Diego SB 743\GIS\MXD\All Country5.mxd

Legend

- At least 15% below the Unincorporated County Average
- 0% to 15% below the Unincorporated County Average
- Above the Unincorporated County Average
- Areas with insufficient data to determine average VMT
- San Diego County Incorporated Cities
- Community Plan Area
- County Water Authority Boundary

Unincorporated County Average = 37.53 Vehicle Miles Traveled/Service Population

San Diego County VMT Per Service Population by TAZ Relative to Unincorporated County Average*

*Based on the SANDAG Series 13 Base Year Model

May 1, 2020

This page intentionally left blank

Appendix D: Project Types Grouped by Land Use Category

This page intentionally left blank

Project Types Grouped by Land Use Category

The following table provides a list of unique project types and the land use type they should be considered under for SB 743 screening and analysis.

LAND USE CATEGORIES

Land Use Category for SB 743 Analysis for all Project Types

1. Residential Projects

The uses below generally fall within the County General Plan Land Use Designations of Village Residential, Semi-Rural Residential or Rural Lands Residential.

- Congregate Care Facility
- Estate Housing
- Mobile Home
- Multiple Dwelling Unit (all sizes)
- Retirement/Senior Citizen Housing
- Single Family Detached

2. Employment Projects

The uses below generally fall within the County General Plan Land Use Designations of General Commercial, Office Professional, Limited-Impact Industrial, Medium-Impact Industrial or High-Impact Industrial.

- Agriculture
- Hospital: Convalescent/Nursing
- Hospital: General
- Industrial/Business Park
- Scientific Research and Development
- Hotel (w/ convention facilities/restaurants)
- Motel
- Resort Hotel
- Military Base
- Commercial Office
- Corporate Headquarters/Single Tenant Office
- Medical Office
- Government Offices (Primarily Office with Employees)
- Industrial: Manufacturing/Assembly
- Industrial: Rental Storage
- Industrial: Truck Terminal
- Industrial: Warehousing

3. Retail and Service

The uses below generally fall within the County General Plan Land Use Designations of General Commercial, Neighborhood Commercial, Rural Commercial, or Village Core Mixed Use.

- Shopping Center
- Automobile Services
- Convenience Market Chain
- Discount Store/Discount Club
- Drugstore
- Furniture Store
- Lumber/Home Improvement Store
- Nursery
- Restaurant
- Specialty Retail Center/Strip Commercial
- Supermarket
- Financial Institution (Bank or Credit Union)
- Bowling Center
- Movie Theater
- Racquetball/Tennis/Health Club
- Sport Facility (Indoor or Outdoor)
- Winery
- Special Event Facility

4. Regional Public Facilities

The uses below generally fall within the County General Plan Land Use Designation of Public and Semi-Public Facilities.

- Airport
- Cemetery
- University
- Community College
- House of Worship: General
- House of Worship: Without School or Day Care
- Bus Depot

5. Locally Serving Public Facilities

The uses below generally fall within the County General Plan Land Use Designation of Public and Semi-Public Facilities.

- Schools (unless determined to draw students from outside the local area)
- Day Care Center/Child Care Center
- Library
- Department of Motor Vehicles
- Government Offices (Primarily Serving Customers)
- Post Office
- Park & Ride Lot
- Transit Station
- Neighborhood Park (developed or undeveloped)

6. Regional Recreational

The uses below generally fall within the County General Plan Land Use Designations of Rural Lands Residential, Rural Commercial, or Open Space- Recreation.

- Marina
- Zoo
- Aquarium
- Golf Course
- Regional Park or Beach, Ocean, or Bay Park

Appendix E: Transportation Projects That Do Not Require VMT Analysis

This page intentionally left blank

Transportation Projects That Do Not Require VMT Analysis

The following complete list is provided in the OPR Technical Advisory (December 2018, Pages 20-21) for transportation 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:"

- Rehabilitation, maintenance, replacement, safety, and repair projects designed to improve the condition of existing transportation assets (e.g., highways; roadways; bridges; culverts; Transportation Management System field elements such as cameras, message signs, detection, or signals; tunnels; transit systems; and assets that serve bicycle and pedestrian facilities) and that do not add additional motor vehicle capacity
- Roadside safety devices or hardware installation such as median barriers and guardrails
- Roadway shoulder enhancements to provide "breakdown space," dedicated space for use only by transit vehicles, to provide bicycle access, or to otherwise improve safety, but which will not be used as automobile vehicle travel lanes
- Addition of an auxiliary lane of less than one mile in length designed to improve roadway safety
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left, right, and U-turn pockets, two-way left turn lanes, or emergency breakdown lanes that are not utilized as through lanes
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management in a manner that would not substantially increase vehicle travel
- Addition of a new lane that is permanently restricted to use only by transit vehicles
- Reduction in number of through lanes
- Grade separation to separate vehicles from rail, transit, pedestrians or bicycles, or to replace a lane in order to separate preferential vehicles (e.g., HOV, HOT, or trucks) from general vehicles
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority (TSP) features
- Installation of traffic metering systems, detection systems, cameras, changeable message signs and other electronics designed to optimize vehicle, bicycle, or pedestrian flow
- Timing of signals to optimize vehicle, bicycle, or pedestrian flow

- Installation of roundabouts or traffic circles
- Installation or reconfiguration of traffic calming devices
- Adoption of or increase in tolls
- Addition of tolled lanes, where tolls are sufficient to mitigate VMT increase
- Initiation of new transit service
- Conversion of streets from one-way to two-way operation with no net increase in number of traffic lanes
- Removal or relocation of off-street or on-street parking spaces
- Adoption or modification of on-street parking or loading restrictions (including meters, time limits, accessible spaces, and preferential/reserved parking permit programs)
- Addition of traffic wayfinding signage
- Rehabilitation and maintenance projects that do not add motor vehicle capacity
- Addition of new or enhanced bike or pedestrian facilities on existing streets/highways or within existing public rights-of-way
- Addition of Class I bike paths, trails, multi-use paths, or other off-road facilities that serve non-motorized travel
- Installation of publicly available alternative fuel/charging infrastructure
- Addition of passing lanes, truck climbing lanes, or truck brake-check lanes in rural areas that do not increase overall vehicle capacity along the corridor

Appendix F: Justification/Rationale Screening Criteria and Threshold

This page intentionally left blank

Appendix F: Justification/Rationale Screening Criteria and Threshold

This appendix provides context and justification/rationale for the screening criteria and thresholds for performing transportation VMT CEQA impact analysis.

Screening Criteria

Development projects are presumed to have less than significant impacts to the transportation system, and therefore would not be required to conduct a VMT analysis, if any of the following criteria are established.

1. Projects Located in a VMT Efficient Area (Location Based Screening Maps)

A VMT efficient area is any area with an average VMT per resident, VMT per employee, or VMT per service population 15 percent below the baseline average for the Unincorporated County. Land use projects may qualify for the use of VMT efficient area screening if the project can be reasonably expected to generate VMT per resident, per employee, or per service population, respectively, that is similar to the existing land uses in the VMT efficient area. Location-based screening maps are used to determine if a project is in a VMT efficient area.

Justification – This presumption is based on the Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018) (OPR Technical Advisory), which provides that "residential and office projects that locate in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Maps created with data from a travel survey or travel demand model can illustrate areas that are currently below threshold. Because new development in such locations would likely result in a similar level of VMT, such maps can be used to screen out residential and office projects from needing to prepare a detailed VMT analysis." These maps are known as the "location-based screening maps." The OPR Technical Advisory also specifies that lead agencies, using more location specific information, may develop their own more specific information that includes more land uses. As such, the location-based screening maps are for residential uses (based on VMT per resident), employment uses (based on VMT per employee), and other uses (based on VMT/service population) that locate in a zone that has similar land uses to the proposed land use.

Note: The County has the discretion to determine thresholds including the appropriate geography to set thresholds by. The OPR Technical Advisory *discusses the "region or city" as an appropriate geography to establish average VMT and thresholds. Since the* OPR Technical Advisory *does not specifically define "region," a potential regional boundary that is logical for the County is the unincorporated county. The unincorporated area aligns with the region that the County has land use jurisdiction over and the General Plan, which contains the goals and policies that shape future growth within the County, is distinct from areas within incorporated*

cities. Since the unincorporated county land use context is diverse and different than the incorporated areas of the county, it is important to consider planning goals and policies that reflect the unincorporated area. To illustrate the diversity and difference between the unincorporated area and incorporated cities, the following statistics are helpful:

- *San Diego County (incorporated and unincorporated areas combined) is approximately 4,526 square miles.*
- *The unincorporated area represents approximately 3,570 square miles or 79% of the land area.*
- *The unincorporated area represents approximately 16% of the countywide population.*

This demonstrates that the unincorporated county context is primarily rural in nature whereas the incorporated cities are largely suburban/urban in nature. A threshold based on the unincorporated county region allows the County to reflect the difference in land use context (rural, semi-rural, and village) as compared to the incorporated area and supports the County's ability to establish thresholds that reflect agency-specific goals and policies.

2. Small Projects

Projects generating less than 110 daily vehicle trips (trips are based on the number of vehicle trips calculated using ITE trip generation rates with any alternative modes/location-based adjustments are applied) may be presumed to have a less than significant transportation impact under CEQA absent substantial evidence to the contrary.

Justification – The OPR Technical Advisory states that "projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant impact." This is supported by the fact that CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development, and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301(e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (e.g., general office building, single tenant office building, office park, or business park) generate or attract an additional 110-124 trips per 10,000 square feet according to the national publication Institute of Transportation Engineers (ITE) Trip Generation Manual. An alternative small project size is justified by using the same procedure described in the OPR Technical Advisory but using an alternative trip-generation model. Specifically, the fact that CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development, and the project is not in an environmentally sensitive area. OPR evaluated the small project size assuming an office building. There are other sources of data to determine the trip generation of a project that could be used in justifying a small project size. Possible data sources available to the County include:

- National Publication of ITE Trip Generation, 9th Edition (2012) – Results in a small project size of 110 daily trips.
- National Publication of ITE Trip Generation, 10th Edition (2017) – Results in a small project size of 100 daily trips.

- SANDAG Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (2002) – Results in 200 daily trips.
- Develop County specific trip generation rates; requires performing trip generation surveys at multiple locations to establish an average trip generation rate.

3. Projects Located in a Transit Accessible Area

Projects located within a half mile of an existing major transit stop or an existing stop along a high-quality transit corridor[1] may be presumed to have a less than significant impact absent substantial evidence to the contrary. Note that Sprinter stations are considered major transit stops. This presumption may not apply if the project:

- Has a Floor Area Ratio of less than 0.75.
- Includes more parking for use by residents, customers, or employees of the project than required by the County.
- Is inconsistent with SANDAG's most recent Sustainable Communities Strategy.
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

Justification – The OPR Technical Advisory includes screening projects that are located near a major transit stop or near a stop along a high-quality transit corridor. Projects located near a major transit stop or near a stop along a high-quality transit corridor can help reduce VMT by increasing capacity for transit-supportive residential and/or employment densities in low VMT areas. The increased density that is associated with projects near high quality transit can increase transit ridership and therefore justify enhanced transit service which would in turn increase the amount of destinations that are accessible by transit and further increase transit ridership and decrease VMT.

4. Locally Serving Retail

Local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel.

Justification – The OPR Technical Advisory provides that "because new retail development typically redistributes shopping trips rather than creating new trips, [2] estimating the total change in VMT (i.e., the difference in total VMT in the area affected with and without the project) is the

[1] Major transit stop: A site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (PRC § 21064.3). High quality transit corridor: A corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute periods (PRC § 21155).

[2] Lovejoy, et al., Measuring the impacts of local land-use policies on vehicle miles of travel: The case of the first big-box store in Davis, California, The Journal of Transport and Land Use, 2013.

best way to analyze a retail project's transportation impacts." Local serving retail generally shortens trips as longer trips from regional retail are redistributed to new local retail.

5. Locally Serving Public Facilities and Other Uses

Public facilities that serve the surrounding community or public facilities that are passive use may be presumed to have a less than significant impact absent substantial evidence to the contrary. These do not include facilities or uses that would attract users from outside the vicinity of the use.

Justification – Similar to local serving retail, local serving public facilities would redistribute trips and would not create new trips. Thus, similar to local serving retail, trips are generally shortened as longer trips from a regional facility are redistributed to the local serving public facility.

6. Redevelopment Projects with Greater VMT Efficiency

Where a project replaces existing VMT-generating land uses, the project may be presumed to have a less than significant impact if the total project VMT is less than the existing land use's total VMT, absent substantial evidence to the contrary.

Justification – Consistent with the OPR Technical Advisory, "where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described (in the OPR Technical Advisory) should apply."

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

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

7. Affordable Housing

An affordable housing project may be presumed to have a less than significant impact absent substantial evidence to the contrary if 100% of units are affordable.

Justification – Affordable residential projects generate fewer trips than market rate residential projects[3]. The OPR Technical Advisory also 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". Project by project

[3] Newmark and Hass, "Income, Location Efficiency, and VMT: Affordable Housing as a Climate Strategy", The California Housing Partnership (2015).

justification is necessary to demonstrate that an affordable housing project is expected to generate less VMT if it is not 100 percent affordable or not located in an infill location. A project located in a suburban context or in a village context within the county can be considered an infill location because those locations represent the areas within the county that have the most compact land use pattern (as compared to rural areas).

Thresholds

If a project is required to complete a VMT analysis, the project's transportation impacts under CEQA would be significant if the project's VMT exceeds the thresholds below.

1. Residential

Threshold – Fifteen percent below the Unincorporated County average VMT per resident.

Justification – The OPR Technical Advisory provides that "residential development that would generate vehicle travel that is 15 percent or more below the existing residential VMT per capita, measured against the region or city, may indicate a less-than-significant transportation impact." OPR notes that this was intended to achieve general consistency with both the Caltrans Statewide target for VMT reduction (15 percent by 2020) and the urban regional targets for greenhouse gas (GHG) emissions reductions established under SB 375 (13-16 percent for passenger vehicles by 2035). The County defines their region as the Unincorporated County for comparison purposes.

2. Employment (Office/Commercial/Industrial)

Threshold – Fifteen percent below Unincorporated County average VMT per employee.

Justification – The OPR Technical Advisory provides that "office projects that would generate vehicle travel exceeding 15 percent below existing VMT per employee for the region may indicate a significant transportation impact." VMT per employee is an appropriate metric for commercial and industrial projects in addition to office projects since the SANDAG regional travel demand model includes employment uses as a broad category. In addition, commercial and industrial projects are similar to an office land use in that the majority of the VMT is generated by employees.

3. Regional Retail/Service

Threshold – A net increase in total area VMT or 15 percent below the Unincorporated County average VMT per service population

Justification – The threshold for retail/service projects within the County is consistent with the OPR Technical Advisory supplemented with the VMT per service population metric as appropriate. The service population metric provides a supplemental metric that captures all VMT associated with a project by including VMT associated with trips entering or exiting the modelling region, allowing for full accounting of project VMT.

The service population metric allows for comparison of the VMT efficiency of retail projects against all other land uses in the Unincorporated County. Using 15 percent below the Unincorporated County average as the threshold holds retail projects to a similar expectation of

VMT efficiency justified above for VMT per employee and VMT per capita. Supplementing the OPR Technical Advisory recommended retail threshold with the service population metric captures all VMT associated with a project by including VMT associated with trips entering or exiting the modelling region, allowing for full accounting of project VMT.

4. Mixed Use

Mixed Use projects contain a multiple land uses as a part of one project, such as residential, office, and retail.

Threshold – Fifteen percent below the Unincorporated County average VMT per service population or each project component evaluated per the appropriate metric based on land use type.

Justification – Evaluating each component of the project based on their land use type is consistent with the OPR Technical Advisory. The service population metric allows for comparison of the VMT efficiency of mixed-use projects against all other land uses in the Unincorporated County. Using 15 percent below the Unincorporated County average as the threshold holds mixed use projects to a similar expectation of VMT efficiency justified above for VMT per employee and VMT per capita. It also captures all VMT associated with a project by including VMT associated with trips entering or exiting the modelling region, allowing for full accounting of project VMT which is not possible using the VMT per employee metric.

5. Regional Recreational

Threshold – A net increase in total regional VMT or 15 percent below the Unincorporated County average VMT per service population.

Justification – The threshold for regional recreational projects within the County is consistent with the OPR Technical Advisory (applying the recommendations for regional retail uses) supplemented with the VMT per service population metric as appropriate. The service population metric allows for comparison of the VMT efficiency of regional recreational projects against all other land uses in the Unincorporated County. Using 15 percent below the Unincorporated County average as the threshold holds regional recreational projects to a similar expectation of VMT efficiency justified above for VMT per employee and VMT per capita. Supplementing the OPR Technical Advisory recommended threshold with the service population metric captures all VMT associated with a project by including VMT associated with trips entering or exiting the modelling region, allowing for full accounting of project VMT.

6. Regional Public Facilities

Threshold – A net increase in total regional VMT or 15 percent below the Unincorporated County average VMT per service population

Justification – Regional public facilities within the County can be analyzed consistent with the OPR technical advisory (applying the recommendations for regional retail uses) by measuring the net change in regional VMT and by using the VMT per service population metric as a supplement. The service population metric allows for comparison of the VMT efficiency of regional public facility projects against all other land uses in the Unincorporated County. Using 15 percent below the Unincorporated County average as the threshold holds regional public

facilities to a similar expectation of VMT efficiency justified above for VMT per employee and VMT per capita. It also captures all VMT associated with a project by including VMT associated with trips entering or exiting the modelling region, allowing for full accounting of project VMT which is not possible using the VMT per employee metric.

This page intentionally left blank

Appendix G: County General Plan Goals and Climate Action Plan Strategies Related to Transportation

This page intentionally left blank

County General Plan Goals and Climate Action Plan Strategies Related to Transportation

The County adopted an update to its General Plan in 2011. The General Plan serves as the legal underpinning for land use decisions and is the County's vision about how the unincorporated area will grow. The term "element" refers to the topics that California law requires be covered in a general plan. In addition to the mobility element (sometimes called a circulation element), the other elements required in California include land use, housing, conservation, open space, noise, safety, and environmental justice for cities and counties with identified disadvantaged communities. Each of these provide a framework for analysis of transportation impacts that support the new method of CEQA analysis, while some will require an analysis outside of CEQA.

Land Use Element

The land use plan and development doctrine that sustain the intent and integrity of the Community Development Model and the boundaries between Regional Categories describes the overarching primacy of the Land Use Element. VMT efficient areas would be located along the western edge of the unincorporated areas by providing streamlining for villages within the County Water Authority boundary and closer to the employment and services centers in the unincorporated areas. Here are key Land Use Policies that influence transportation analysis.

> **Goal LU-5 Climate Change and Land Use.** Incorporate a mixture of uses within Villages and Rural Villages and plan residential densities at a level that support multi-modal transportation, including walking, bicycling, and the use of public transit, when appropriate. This is to support a reduction of vehicle trips within communities.
>
> **Goal LU-9 Distinct Villages and Community Cores.** In villages, encourage future residential developments to achieve planned densities through multi-family, mixed use, and small-lot single-family projects that are compatible with community character.

Mobility Element

The Mobility Element includes several components including a description of the County's goals and policies that address the safe and efficient operation, as well as maintenance and management of the transportation network. The Mobility Element framework provides for a balanced, multi-modal transportation system for the movement of people and goods within the unincorporated areas of the County of San Diego. General Plan Policy M-2.1 requires a LOS D or higher for all roads. Criteria were established for 'Accepting a Road Classification with a LOS E and LOS F' when specific issues of community character or environmental constraints were considered. The buildout of the General Plan Mobility Element was estimated to have planning level costs of $2.39 Billion, a reduction of $4.4 Billion from the previous General Plan. The road network in the Mobility Element was studied in the General Plan Program EIR through impacts on LOS. Mitigation measures identified in the Program EIR were the goals and policies in the Mobility and Land Use Elements, as well as a required update to the Transportation Impact Program. On October 31, 2012, the Board adopted updates to the Transportation Impact Fee to implement the Mobility Element for the General Plan. The update overall reduced residential impact fees by 46% and commercial impact fees by 75%. The TIF is estimated to pay $535 Million towards the $2.39 Billion estimated to build out the Mobility Element. Implementation of

the remaining Mobility Element would occur overtime to be paid for by private development, through State or Federal funds, grants, or the County's General Fund.

Here are key County General Plan Mobility Element Goals that direct how transportation analysis is performed to facilitate the implementation of the County General Plan vision:

Goal M1- **A Balanced Road Network**. A safe and efficient road network that balances regional travel needs with the travel requirements and preferences of local communities.

Goal M2 – **Responding to Physical Constraints and Preservation Goals. Level of Service Criteria.** Require development projects to provide associated road improvements necessary to achieve a level of service of "D" or higher on all Mobility Element roads except for those where a failing level of service has been accepted by the County.

Goal M3 – Transportation Facility Development. New or expanded transportation facilities that are phased with and equitably funded by the development that necessitates their construction.

GOAL M4 – Safe and Compatible Roads. Roads designed to be safe for all users and compatible with their context.

GOAL M5 – Safe and Efficient Multi-Modal Transportation System. A multi-modal transportation system that provides for the safe, accessible, convenient, and efficient movement of people and goods within the unincorporated County.

GOAL M6 – Efficient Freight Service Linked to Other Transportation Modes. Freight services that efficiently move goods and that are effectively linked to other transportation modes.

GOAL M8 – Public Transit System. A public transit system that reduces automobile dependence and serves all segments of the population.

GOAL M9 – Effective Use of Existing Transportation Network. Reduce the need to widen or build roads through effective use of the existing transportation network and maximizing the use of alternative modes of travel throughout the County.

GOAL M10 – Parking for Community Needs. Parking regulations that serve community needs and enhance community character.

GOAL M11 – Bicycle and Pedestrian Facilities. Bicycle and pedestrian networks and facilities that provide safe, efficient, and attractive mobility options as well as recreational opportunities for County residents.

GOAL M12 – County Trails Program. A safe, scenic, interconnected, and enjoyable non-motorized multi-use trail system developed, managed, and maintained according to the County Trails Program, Regional Trails Plan, and the Community Trails Master Plan.

The County adopted an Active Transportation Plan in October 2018 that updated the County's standards for bicycle facilities and classifications and included a Pedestrian Gap Analysis appendix that identifies potential sidewalk and pathway improvements in villages throughout the county. The updated bicycle facility classifications are included in

the Mobility Element Appendix maps of the General Plan. The Board of Supervisors also adopted a Complete Streets Policy (J-38) along with the adoption of the Active Transportation Plan.

In recognition of SB 743 and new CEQA requirements for VMT analysis, and to ensure consistency with the County's General Plan Goals and Policies, the TSG includes criteria for properly assessing and mitigating VMT within the county, as well as procedures and methods for analyzing and identifying specific improvements to maintain LOS standards, and to address the safety and operations of the transportation system for all users.

Housing Element

The Housing Element objectives include improving housing affordability, assigning densities based on characteristics of the land, and locating growth near infrastructure, services and jobs. A key Housing Element Policy that influences transportation analysis is:

> **Goal H-1.3 Housing Near Public Services.** Maximize housing in areas served by transportation networks, within close proximity to job centers, and where public services and infrastructure are available.

Conservation Open Space Element

There is a strong correlation between land use planning, transportation system planning, and the emission of air quality pollutants, GHG that contribute to global climate change. The General Plan recognized that the primary opportunities to reduce air quality pollutants and GHG emissions are in the urbanized areas of the County where there are land use patterns that can best support the increased use of transit and pedestrian activities since most GHGs and air pollutants result from mobile source emissions. The General Plan notes, "the unincorporated County can also be part of the solution by producing development patterns that contribute to reducing the dependence on the automobile and by promoting development with lower energy demands…A holistic approach to achieving sustainable communities requires the integration of a regionwide multi-modal transportation system with a significant reliance on single-occupant motor vehicles, along with buildings that consume less through design and efficient building materials." A key conservation element that influences transportation analysis is:

> **Goal COS-14 Sustainable Land Development.** Land use development techniques and patterns that reduce emissions of criteria pollutants and GHGs through minimized transportation and energy demands, while protecting public health and contributing to a more sustainable environment.

Climate Action Plan

The County Climate Action Plan (CAP), adopted in February 2018, and the County Active Transportation Plan (ATP), adopted in October 2018, also support the intent of SB 743. Light duty vehicle emissions constitute approximately 43% of the total unincorporated GHG emissions. The CAP has two GHG emissions reduction strategies related to VMT, which reduce 40,673 metric tons of GHG emissions (about 2.7% of the amount emitted by on-road transportation in the unincorporated county). CAP Strategies T-1 and T-2 focus on reducing VMT and shifting towards alternative modes of transportation, focusing density in unincorporated villages, conserving open space and agricultural lands, and implementing infrastructure improvements to provide for active

transportation. A transportation demand management (TDM) ordinance, being developed as a measure of the CAP, will be an important tool for non-residential projects to use when mitigating VMT impacts while also reducing GHG emissions. The CAP and ATP identify capital improvements related to pedestrian and bicycle infrastructure improvements that SB 743 mitigations could fund in the future.

Strategy T-1: Reduce Vehicle Miles. This strategy focuses on preserving open space and agricultural lands, and focusing density in the county villages. Conservation efforts will avoid GHG emissions from transportation and energy use associated with conveyance of water and solid waste services. Reductions in Vehicle Miles Traveled (VMT) resulting from this strategy will also improve air quality through reduced vehicle emissions and contribute to public health improvements by creating opportunities for active transportation choices.

Strategy T-2: Shift Towards Alternative Modes of Transportation. This strategy focuses on implementing infrastructure improvements to promote active transportation, and understanding commuters' transportation decisions in order to help people use the infrastructure in place for transit, ridesharing, walking, biking, and telework. The strategy also includes measures that sets performance standards for reducing employee commute trips at County facilities, parking management, and focusing development in the county villages. Reducing transportation emissions has a beneficial effect of improving public and community health through both enhanced air quality and mobility, and cost savings for community members by reducing fuel use.

Appendix B: 2019 San Diego County Economic Impact of Wineries

2019 San Diego County Economic Impact of Wineries

San Diego County Vintners Association

This study was underwritten, in part, by the San Diego County Vintners Association (SDCVA).

All conclusions, errors and omissions are the sole responsibility of the author. We thank SDCVA for their support.

Executive Summary

Over the last few years, wineries in San Diego County have noticeably expanded their presence in the regional economy, fostering job growth, tax revenue, and property improvements throughout the county. An in-depth economic data analysis can highlight the important economic opportunities and policy choices presented by this unique agricultural sector. Using survey data, economic modeling software, and public datasets, we conducted an economic analysis of the San Diego County wine industry, building upon our prior research in this sector.

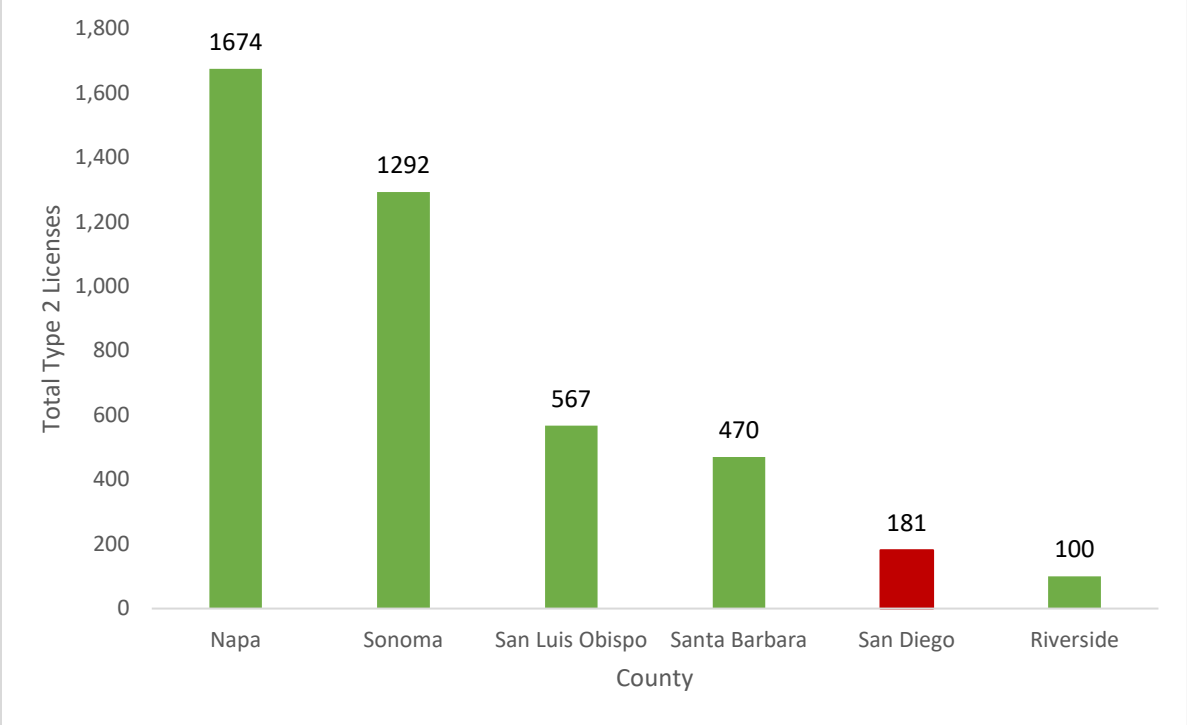
Overall, we found that:

- The economic impact of San Diego County wineries was $58.6 million in 2018.
- In 2018, San Diego County wineries generated $41,059,126 million in gross sales, a 57.1% increase over 2017 sales ($26.1 million) and a 71.9% increase from 2016 sales ($23.8 million).
- San Diego County has maintained steady interest and growth in new wineries since 2012. The data reveals this is reflective of a confluence of existing wineries adding new satellite tastings rooms in the region, and new winery owners establishing their business operations.
- Today, there are 142 active and planned wineries in San Diego County.
- Overall, there were 611.7 San Diego-based wine industry jobs in 2018, a 9.7% increase over the 2017 total (557.2) and 17.8% higher than the 2016 total (519).
- In 2018, San Diego County growers harvested 3,284 tons of wine grapes with a production value of $4,591,032. In all, 1,642 acres of wine grapes were harvested, an amount that is more than 50% higher than the acre tally from 2016 (930) and more than 1,000 acres from just ten years ago.
- Varietal diversity continues to expand in San Diego County – our survey found that more than 62 varietals are grown in the region, a higher tally than found in prior survey years (45 in 2017 and 2016). As seen in prior surveys, the top five varietals grown, cultivated and/or sold in the region in 2018 were Cabernet Sauvignon, Syrah, Merlot, Sangiovese and Zinfandel.
- The steady rise in average industry wages in San Diego County hit a new record in Quarter 1 2019, with $48,724 as the opening average wage for 2019. It is our view that the significant rise in average wages since 2016 is a combination of both rising wages for a growing number of new industry jobs, as well as more boutique winery owners, who previously operated without paying themselves a wage, now paying themselves a wage.
- More than six out of ten (64%) wineries stated that Millennials are a growing portion of their clientele. Most survey participants indicated that Millennials also comprised 20-30% of their sales in 2018.

Industry Overview

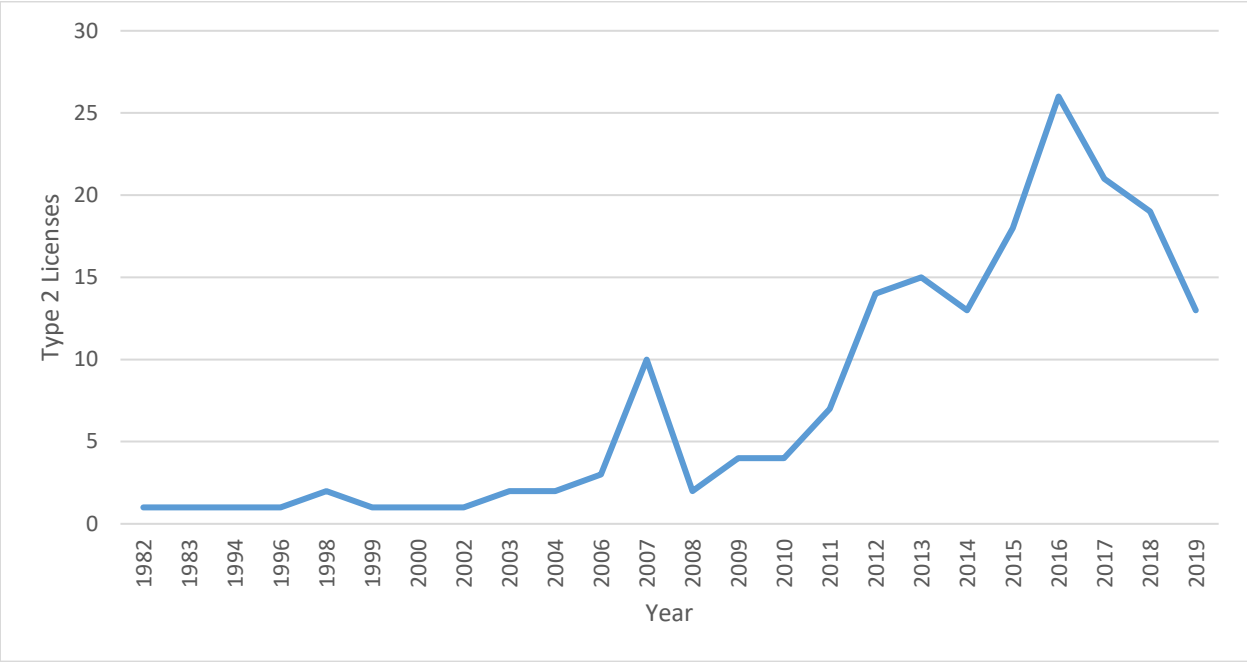
According to data from the California Department of Alcoholic Beverage Control (ABC), there are 181 active winegrower licenses in San Diego County, a marginal increase from the total from mid-year 2018 (174). As illustrated in Chart 1, San Diego winegrowers have maintained their relative position among benchmark counties in California, which have also experienced marginal changes in license tallies. We do not anticipate this overall industry measurement to change significantly in future years.

Chart 1: Total Active Type 2 Licenses, by County, September 2019



Taking a closer look at ABC winegrower license data, San Diego County has maintained steady interest and growth in new wineries since 2012 (Chart 2). Following a peak in new winegrower licenses in 2016 (26), additional licenses have been issued at record levels, with 19 new licenses in 2018 and 13 in 2019 as of October. The data reveals this is reflective of a confluence of existing wineries adding new satellite tastings rooms in the region, and new winery owners establishing their business operations.

Chart 2: First Year of Issuance, Type 2 ABC Winegrower Licenses, San Diego County, 1982-2019

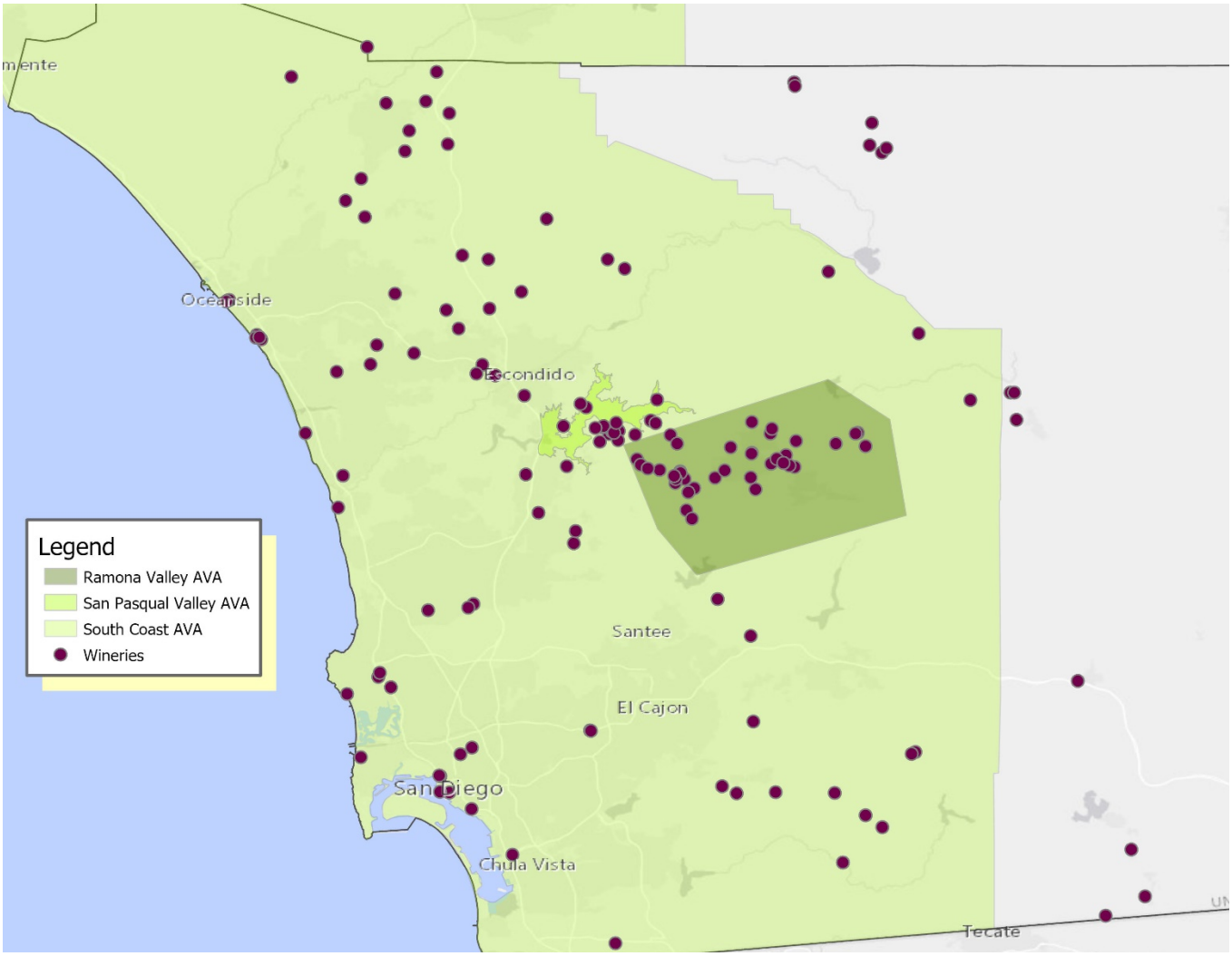


We next conducted an exhaustive review of Type 2 Licenses in the region, verifying that license holders were open for business or in the planning process. We removed duplicate licenses, inactive wineries, and non-wineries from our list. In total, we identified there are 142 active and planned wineries in San Diego County.[1] As revealed by Figure 1, local wineries are located throughout the region, and satellite tasting rooms reach many of the urban and coastal communities that dot the San Diego landscape.

San Diego County has three American Viticultural Areas (AVAs), or federally designated wine grape growing regions - San Pasqual Valley, Ramona Valley, and the South Coast. These AVAs are illustrated in distinct shades of green in Figure 1. It is interesting to note that San Pasqual Valley is one of California's oldest AVAs – it was established in 1981, the same year in which Napa Valley was established as an AVA. Today, California is home to 140 AVAs.

[1] This figure is different from the total Type 2 license count for San Diego County. Our Type 2 license tally includes duplicate licenses, wineries that are no longer operating, planned wineries, as well as cider and mead producers.

Figure 1: Wineries and Satellite Tasting Rooms in San Diego County, September 2019



2019 Survey

In order to assess the experience and perspective of regional winery owners, we partnered with the San Diego County Vintners Association to electronically distribute an 18-question survey to its members. We supplemented this partnership by distributing the survey directly to non-member winery owners, using contact information found via Internet research and business license records. Prospective respondents were contacted over multiple rounds of emails from August 13-29. Overall, we received 42 responses, generating a 34% response rate, which is the same response rate from the 2018 survey, and slightly higher than the 2017 response rate (32%).

To maintain quality control of our survey instrument, and ensure that survey responses are in aggregate reflective of the views and experiences of regional wineries, we weighted responses using SPSS statistical software. We used a multivariate weighting analysis, weighting responses by 1) winery type

(urban winery, major use permit, et al), 2) geographic location, and 3) the year in which the winery was established.

Sales & Economic Impact

Respondents were asked to indicate their total estimated gross sales revenue for 2018, and the year-over-year rate of change for 2017-2018 sales. We first compiled revenue responses and supplemented them with responses from prior surveys, and in limited cases sales data from ReferenceUSA, a proprietary business record database. Overall, we estimate that in 2018, county wineries generated $41,059,126 in gross sales, a 57.1% increase over 2017 sales ($26,134,100) and a 71.9% increase from 2016 sales ($23,873,100).[2]

The year-over-year sales rate changes varied widely, with some respondents indicating flat sales between 2017 and 2018, and some indicating high double digit and triple digit increases. Most identified double-digit increases between 20-40%. We conservatively place the average year-over-year increase for the industry countywide at 32%, an increase from 2016-2017 (26%).

To calculate the 2018 economic impact of wineries in San Diego County, we processed survey workforce and sales data through IMPLAN, a best-in-class regional input/output economic modeling software program. Input/output models are an econometric technique used to evaluate economic relationships within a geographic area. Overall, we found that the San Diego County wine industry generated a $58.6 million regional economic impact in 2018. We also found that the industry supports a total of 928.72 jobs in the region, a figure which includes all direct (611.7), indirect (149.55) and induced (167.47) jobs[3].

Table 1: Economic Dynamics of San Diego County Wineries, 2018

Impact Type	Employment	Wages	Economic Impact	Sales
Direct Effect	611.7	$27,384,200	$32,356,633	$41,059,126
Indirect Effect	149.55	$6,777,197	$10,520,649	$17,768,378
Induced Effect	167.47	$8,379,492	$15,738,777	$25,331,462
Total Effect	928.72	$42,540,889	$58,616,060	$84,158,966

Harvest

For our harvest analysis, we first pulled twelve years of crop data from the San Diego County Agriculture, Weights and Measures Department, and found that wine grape growing is reaching new levels of record growth. In 2018, San Diego County growers harvested 3,284 tons of wine grapes with a production value of $4,591,032. In all, 1,642 acres of wine grapes were harvested, an amount that is more than 50% higher than the acre tally from 2016 (930) and more than 1,000 acres from just ten years ago (489 acres in 2009). San Diego County produced a record amount of wine grapes in 2012, when

[2] It should be noted that our 2018 industry sales estimate includes some previously underreported sales data.
[3] "Indirect jobs" refer to those jobs that result from businesses procuring goods and services from other businesses in the geographic area. "Induced jobs" refer to those jobs that result from workers spending their wages on goods and services within a geographic area, and those spent dollars circulating through the economy.

4,813 tons of wine grapes were harvested from only 752 acres. The 2018 harvest included newly planted grapes and a more diverse varietals than in prior years. We project that, with stronger rainfall totals, future years are likely to surpass the 2012 wine grape harvest record in the region.

Table 2: San Diego County Wine Grape Harvest, 2016-2018

Year	Acres Harvested	Tons Produced	Production Value	Value/Ton
2016	930	2,515	$ 3,005,000	$ 1,195
2017	1,210	2,783	$ 3,854,455	$ 1,385
2018	1,642	3,284	$ 4,591,032	$ 1,398

To give some meaningful comparative context to this crop data, we compared two key San Diego County wine grape harvest metrics, tons per harvested acre and value per ton, to those metric kevels from other benchmark wine grape growing regions in the state. As illustrated in Table 3, San Diego County's mostly small, boutique winery community is unique and underscored in the harvest data; crop values and production levels are lower than other wine regions in the state. Other relevant factors to consider include relative temperature and rainfall levels; the number and size of wineries; acreage; varietals; bulk grape production; and market demand.

Table 3: 2018 Tons of Wine Grapes Harvested per Harvested Acre, and Value of Harvest Wine Grapes per Ton Harvested, by County, 2018

County	Tons/Harvested Acre	Value/Ton
Napa	4.3	$ 5,627
Riverside	3.8	$ 1,623
Santa Barbara	3.7	$ 2,052
San Luis Obispo	4.1	$ 1,559
Sonoma	4.6	$ 2,818
Santa Clara	3.7	$ 1,705
SAN DIEGO	**2.0**	**$ 1,398**

We were also interested in learning how wine grape planting in the San Diego region compared to the rest of California. The California Department of Food and Agriculture partners with the U.S. Department of Agriculture to survey wine grape growers in California annually, requesting, among other data points, the number of acres of newly planted wine grapes. While the survey data is only a sample of the overall population, we see a shared trend of newly planted wine grapes reaching a peak in 2013, with additional plantings down sharply in more recent years (Table 4).[4]

[4] California Grape Acreage Report: 2018 Crop. California Department of Food and Agriculture in cooperation with USDA's National Agricultural Statistics Service. April 19, 2019. Table 10.

Table 4: Wine Grape Acreage Standing by County, By Year Planted, San Diego County vs All Other California Counties

Year	2010 and Earlier	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
San Diego County	434	31	33	41	28	24	30	13	7	641
All Other CA Counties	400,848	8,451	14,138	14,472	13,632	8,964	7,478	6,192	4,498	478,673

Looking closer at the regional wine grape harvest, we see in the survey responses a noticeable shift in both harvest yield and quality, from exceptionally high satisfaction levels in 2017 to more measured, average levels in 2018 (Chart 3 and Chart 4). While more research is required, we believe this shift is largely due to a "significant summer heat spike" in 2018, which was reported by growers in San Diego County, as well as those in Temecula and Paso Robles.[5] According to the Wine Institute, in San Diego County "a heat event in early July damaged several vineyards in the area and presented challenges for growers in certain locations. The harvest began about three weeks later than in the last few years, and yields were lower than normal due to the heat spike."[6]

<https://www.nass.usda.gov/Statistics_by_State/California/Publications/Specialty_and_Other_Releases/Grapes/Acreage/2019/201904gabtb00.pdf >.

[5] Source: California Wine 2018 Harvest Report. Wine Institute. <https://www.wineinstitute.org/files/WineInstitute_HarvestReport2018.pdf>.

[6] Ibid.

Chart 3: Harvest Yield, San Diego County, 2016-2018

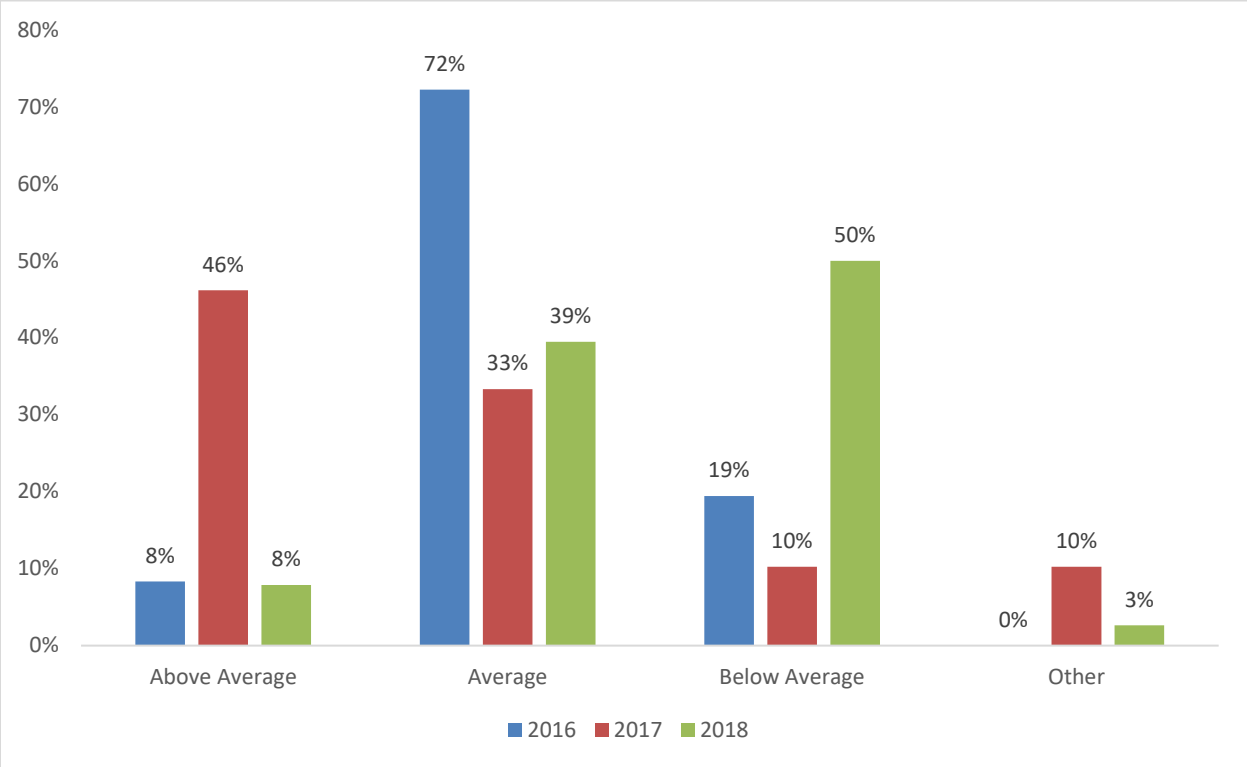
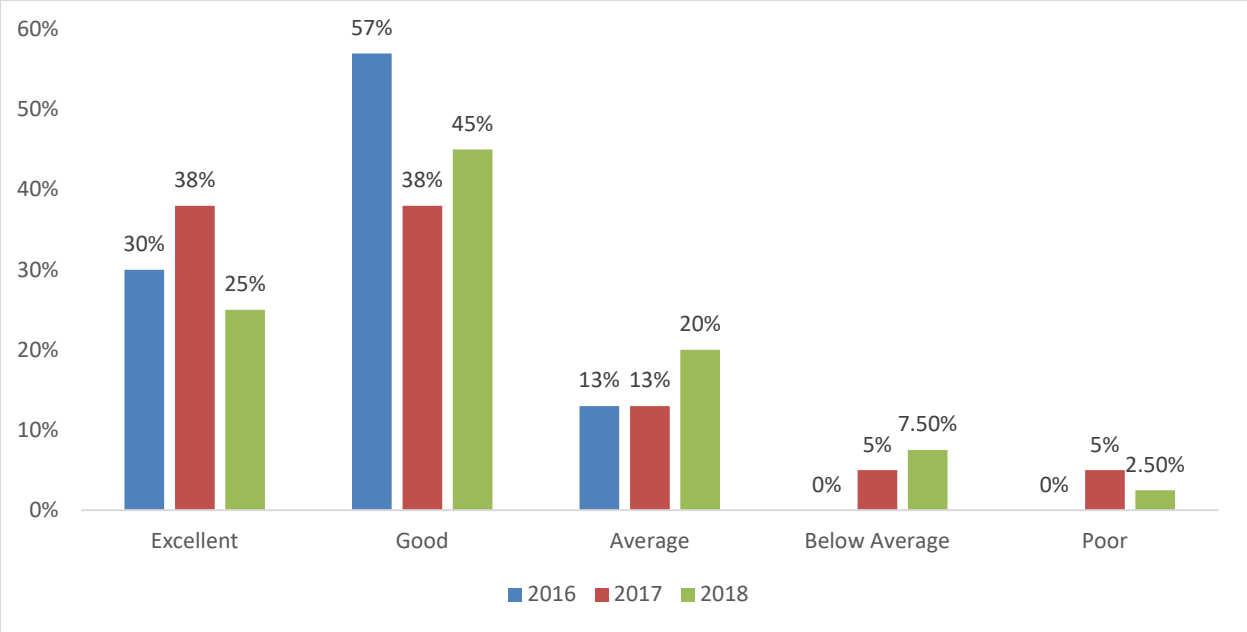
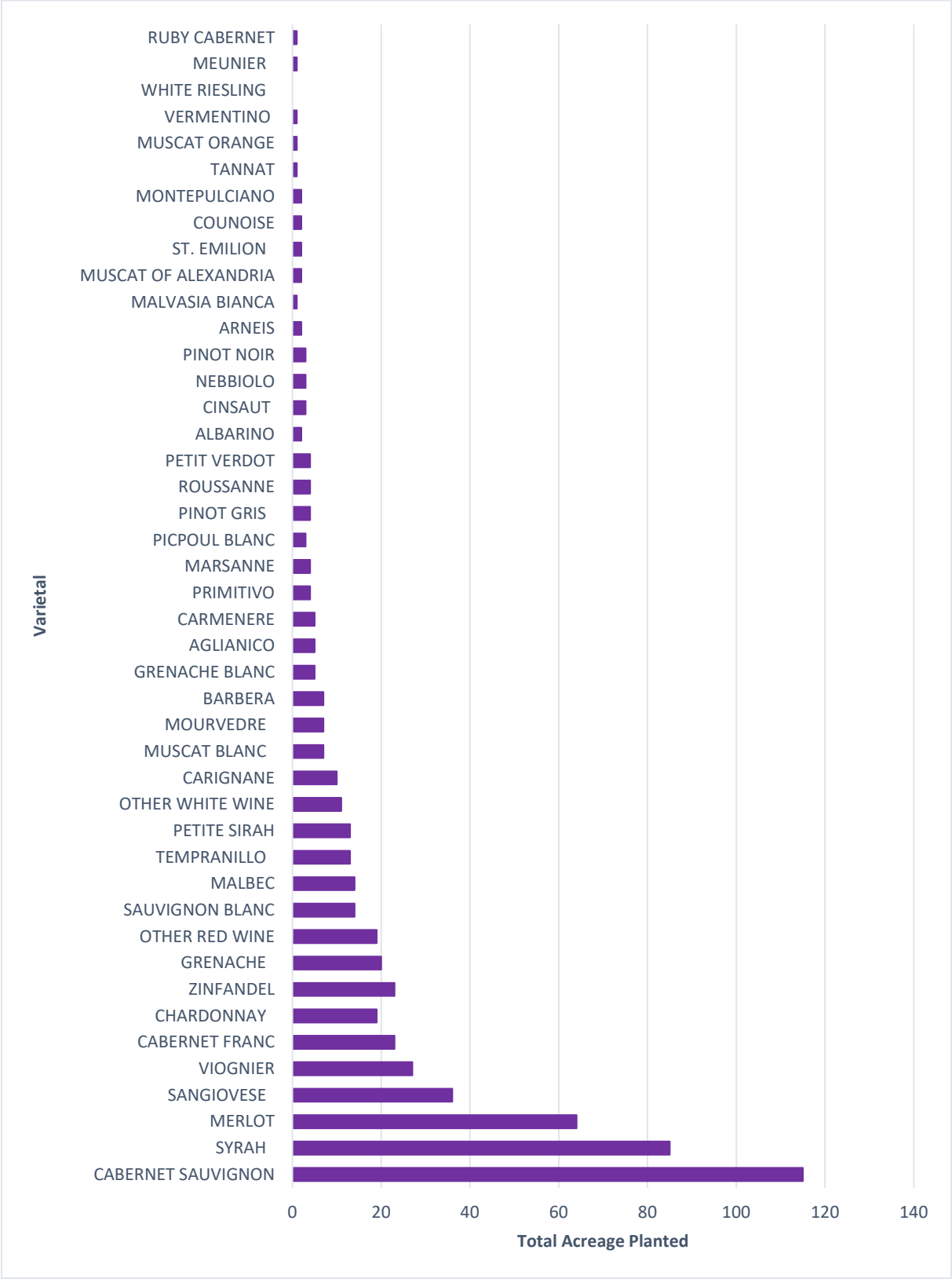


Chart 4: Harvest Quality, San Diego County, 2016-2018



Varietal diversity continues to expand in San Diego County – our survey found that more than 62 varietals are grown in the region, a higher tally than found in prior survey years (45 in 2017 and 2016). As seen in prior surveys, the top five varietals grown, cultivated and/or sold in the region in 2018 were Cabernet Sauvignon, Syrah, Merlot, Sangiovese and Zinfandel. For 2018, we supplemented our survey data with varietal data from the 2018 California Grape Acreage Report, which identifies wine grape varietal planted acre by county. As illustrated in Chart 5, San Diego County is home to a large number of varietals that are grown on a small scale.

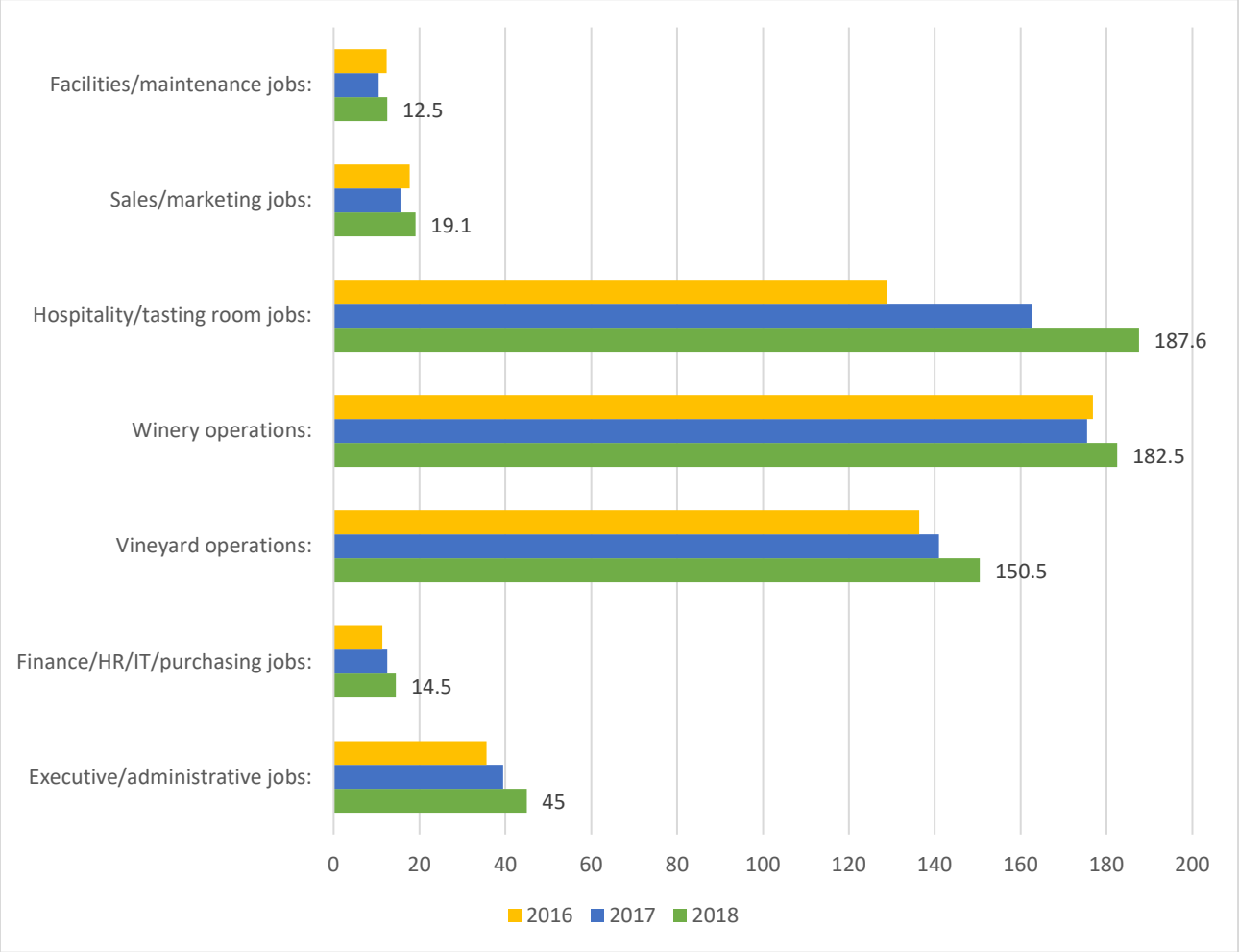
Chart 5: Wine Grape Varietal, by Planted Acreage, San Diego County, 2018



Workforce, Wages & Training

The regional winery workforce saw some notable shifts in 2018. For the first time, hospitality and tasting room jobs surpassed winery operations as the largest segment of the sector workforce, 187.6 jobs vs 182.5 jobs (Chart 6). This underscores the new satellite tasting rooms, urban wineries, and the expansion of wineries into larger, full-time operations with expanded hours open to the public. All other job occupations saw marginal growth from 2017. This suggests the 2016-17 shrinkage in certain occupational categories was indeed variance in survey participation, rather than an indication of a larger downward workforce trend.

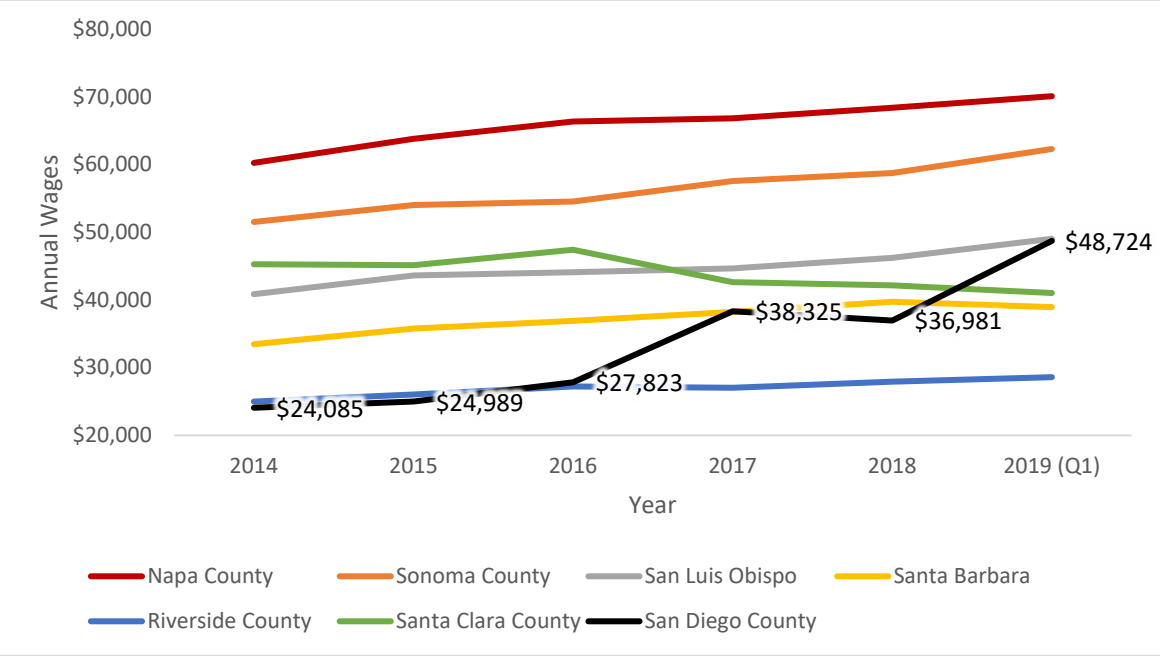
Chart 6: San Diego County Wine Industry Workforce, by Occupation, 2016-18



Overall, there were 611.7 San Diego wine industry jobs in 2018, a 9.7% increase over the 2017 total (557.2) and 17.8% higher than the 2016 total (519).

In order to compare average industry wages in San Diego County to benchmark regions in California, we obtained occupational employment and wage data from the US Department of Labor's Bureau of Labor Statistics. As illustrated in Chart 7, the steady rise in average industry wages in San Diego County hit a new record in Quarter 1 2019, with $48,724 as the opening average wage for 2019. This wage rate is higher than the average in three benchmark regions (Riverside, Santa Barbara, Santa Clara), and nearly matches the average industry wage in San Luis Obispo ($49.036). It is our view that the significant rise in average wages since 2016 is a combination of both rising wages for a growing number of new industry jobs, as well as more boutique winery owners, who previously operated without paying themselves a wage, now paying themselves a wage. We believe that both factors are positive, encouraging signs for continued industry development and stability.

Chart 7: Average Annual Industry Wages, by County, 2014-2019 (Q1)



Public Policies & Priorities

As in prior surveys, we asked regional winery owners "Looking towards future growth for your business, please rank only the Top Five issues that are impediments to growth." We provided thirteen issues which have been identified by industry participants and additional market research as major challenges

to wineries and to the region at large. We weighted responses based upon their ranking and the response sample, and developed a hierarchical index of responses. The higher the index score, the more of a priority the issue is to future sector growth.

For the first time in three years of surveys, "labor costs" moved from the #2 position to #1, followed by "talent/labor supply," which in 2017 sat at the #6 position. In 2017, the top choice was "permits/local regulation," which now is in 4th place. The evidence suggests that a greater industry emphasis should be placed upon resolving concerns about workforce compensation, recruitment and retention. Interestingly, the bottom two choices in our index, "land/space/available real estate" and "Non-San Diego market competition" are the same choices from 2017.

Table 5: Impediments to Industry Growth Index (Top Five)

Issue	Index Score	Sample
Labor costs	4.7	26
Talent/labor supply	6.1	23
State/federal regulation	7.0	20
Permits/local regulation	8.2	20
Marketing	9.7	17
Availability/price of inputs (viticulture supplies/equipment)	10.5	15
Water rates/supply	11.0	16
Distribution	11.8	14
Groundwater/runoff rules	12.8	13
Taxes	13.9	12
Access to capital	16.5	11
Land/space/available real estate	18.5	10
Non-San Diego market competition	32.3	6

The previous two surveys looked at the nexus between regional tourism and the wine industry in San Diego, and the state drought. We now turn our focus this year to two more germane issues in focus – regional wildfires, and the Millennial wine market.

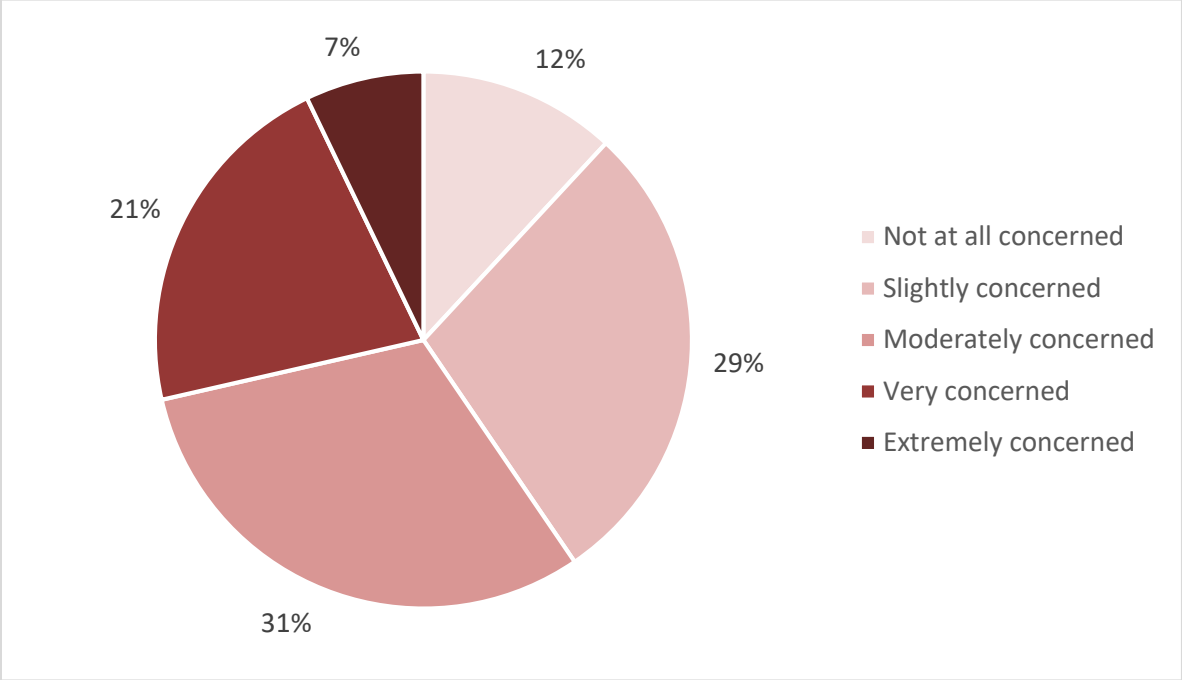
In 2017 and 2018, wildfire events destroyed thousands of structures and burned tens of thousands of acres in Sonoma, Napa and Mendocino counties. While the overwhelming majority of wine acreage and wineries were unaffected,[7] there was an immediate drop in tasting room attendance and a languishing public perception that wineries were damaged and not open for business. In October 2018, oenologists

[7] North Coast Wildfire Impact Study Signals Strong Recovery in Early Findings. Sonoma State University, Wine Business Institute. January 26, 2018. <https://sbe.sonoma.edu/news/north-coast-wildfire-impact-study-signals-strong-recovery-early-findings>.

at the University of California – Davis began a new area of research, investigating the impact wildfires, smoke and smoke taint have on wine grapes and the wine industry at large.[8]

We asked survey respondents, "How concerned are you about the threat of future wildfire and their impact on your winery operations and business?" Overall, few are concerned about wildfires (Chart 8) – about 40% were "not at all concerned" or only "slightly concerned," and 31% are "moderately concerned." Slightly more than a quarter (29%) said they were "very concerned" or "extremely concerned" about wildfires. We will continue to monitor this issue, and include it for future surveys.

Chart 8: Wineries and Wildfire Concerns



The other topic which we were interested in exploring with respondents this year was Millennial customers. While Millennials have not emerged nationally as an ascendant wine customer market[9], they have become the largest segment of the national workforce, and their earnings potential and discretionary income have increased. With more than an estimated 600,000 Millennials calling San

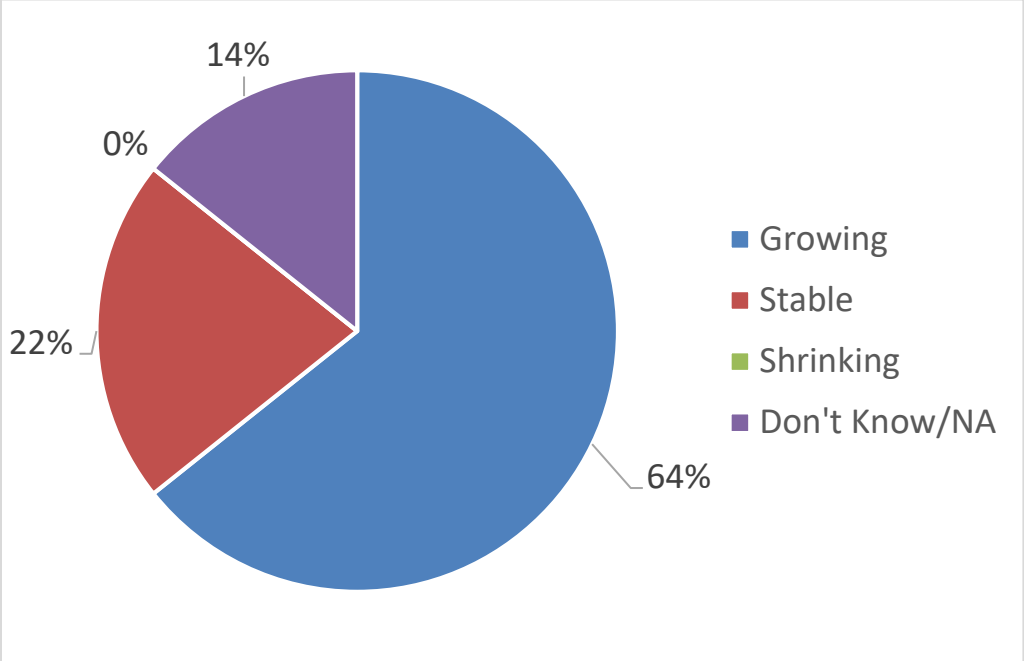
[8] Listen: Wine Country Wildfires Leave Questions for Vintners. By Amy Quinton and Andy Fell. University of California – Davis. October 8, 2018. <https://www.ucdavis.edu/food/news/wine-country-wildfires-leave-questions-for-vintners/>.

[9] State of the Wine Industry Report 2019. Silicon Valley Bank. <https://www.svb.com/globalassets/library/images/content/trends_and_insights/reports/wine_report/svb-2019-wine-report>.

Diego County home, and 35.7 million visitors to the San Diego region in 2018[10], it is important to know how this demographic segment falls within the local wine sector.

We first asked whether Millennials were a growing, stable or shrinking part of the respondent's customer base. As indicated in Chart 9, more than six out of ten (64%) stated that Millennials are a growing portion of their clientele. None said it was a shrinking part of their customer base.

Chart 9: Responses to "Are Millennials (born 1981-1996) a growing, stable, or shrinking portion of your customer base?"



We next asked survey respondents "what percentage of 2018 sales would you attribute to Millennial customers?" Responses ranged from 2% to 50%, but most survey participants indicated that Millennials comprised 20-30% of sales in 2018. Lastly, we asked what, in the respondent's opinion, were some of their observations of the common interests and habits of Millennials and their wine tasting experience. There was a range of responses, but most respondents noted the emphasis of Millennials on wine education, music, events, and overall to have an experience. Also noteworthy was the importance of rideshare access, winery sustainability, and less on winery memberships.

[10] San Diego Visitor Industry Summary. San Diego Tourism Authority. <https://www.sandiego.org/-/media/files/research/visitor-industry/industryperformance--researchpage-annual-thru-2018.pdf?la=en>.

About The Policycraft Institute

Established in 2019, the Policycraft Institute is an independent public policy research organization based in Carlsbad, California.

About the Author

Vince Vasquez is an independent economic data analyst and executive director of the Policycraft Institute. Professionally, he has worked as a public policy researcher for more than fourteen years. He has authored more than forty policy papers on a range of economic and workforce issues, including craft brewing, small business districts, and the renewable energy sector. Mr. Vasquez has conducted hundreds of media interviews, including ABC News, and print, radio and television outlets. He has a Bachelor of Arts in Political Science from the University of California, San Diego, and a Master's in Public Administration. He has used GIS software professionally for more than ten years.

The San Diego County Vintners Association (SDCVA) is a non-profit member association dedicated to supporting the San Diego viticulture and winemaking community, educating local wine enthusiasts and embracing sustainable agricultural practices in the county.

SAN DIEGO COUNTY
VINTNERS ASSOCIATION

Appendix C: Technical Advisory on Evaluating Transportation Impacts in CEQA

TECHNICAL ADVISORY

ON EVALUATING TRANSPORTATION IMPACTS IN CEQA

December 2018

Contents

A. Introduction

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

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

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

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

B. Background

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

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

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

---

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

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

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

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

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

---

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

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

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

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

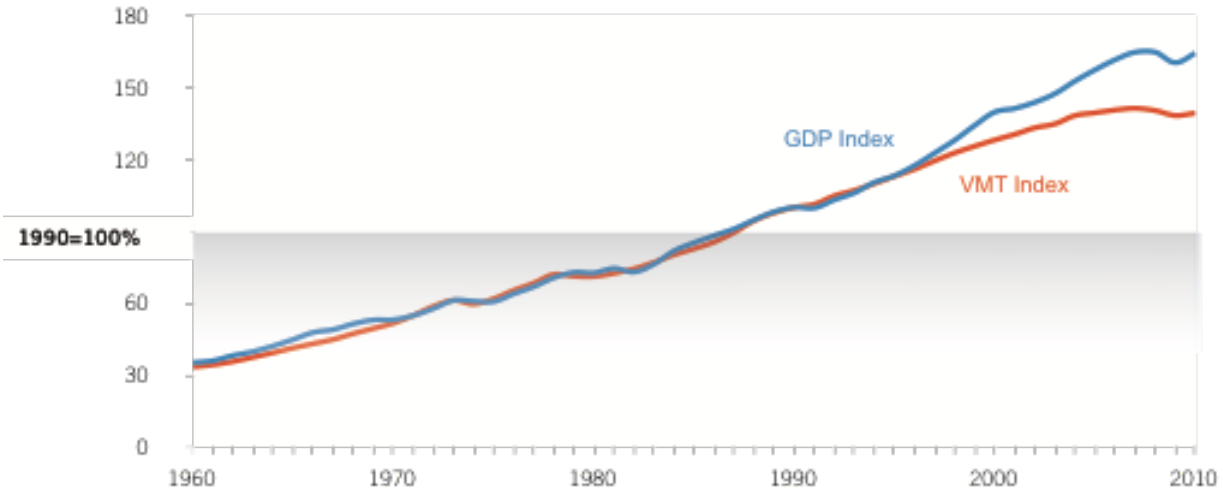


Figure 1. Kooshian and Winkelman (2011) *VMT and Gross Domestic Product (GDP), 1960-2010*.

C. Technical Considerations in Assessing Vehicle Miles Traveled

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

1. Recommendations Regarding Methodology

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

D. General Principles to Guide Consideration of VMT

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

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

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

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

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

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

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

E. Recommendations Regarding Significance Thresholds

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

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

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

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

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

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

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

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

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

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

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

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

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

Considering these various targets, the California Supreme Court observed:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

---

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

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

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

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

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

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

1. Screening Thresholds for Land Use Projects

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

Screening Threshold for Small Projects

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

Map-Based Screening for Residential and Office Projects

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

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

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

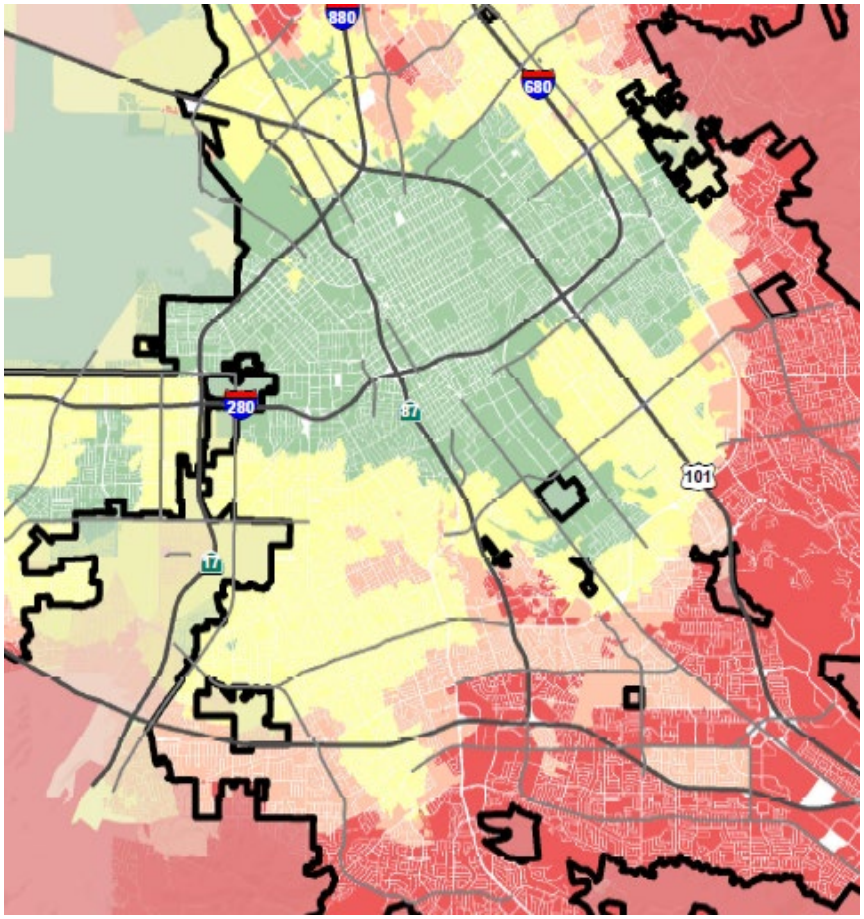


Figure 2. Example map of household VMT that could be used to delineate areas eligible to receive streamlining for VMT analysis. (Source: City of San José, Department of Transportation, draft output of City Transportation Model.)

Presumption of Less Than Significant Impact Near Transit Stations

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

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

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

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

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

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

Presumption of Less Than Significant Impact for Affordable Residential Development

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mixed-Use Projects

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

Other Project Types

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

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

Redevelopment Projects

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

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

[31] Including naturally-occurring affordable residential units.

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

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

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

RTP/SCS Consistency (All Land Use Projects)

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

3. Recommendations Regarding Land Use Plans

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

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

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

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

4. Other Considerations

Rural Projects Outside of MPOs

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

Impacts to Transit

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

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

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

F. Considering the Effects of Transportation Projects on Vehicle Travel

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

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

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

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

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

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

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

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

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

1. Recommended Significance Threshold for Transportation Projects

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

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

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

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

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

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

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

2. Estimating VMT Impacts from Transportation Projects

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

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

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

Transit and Active Transportation Projects

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

Roadway Projects

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

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

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

To estimate VMT impacts from roadway expansion projects:

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

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

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

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

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

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

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

Mitigation and Alternatives

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

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

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

G. Analyzing Other Impacts Related to Transportation

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

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

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

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

H. VMT Mitigation and Alternatives

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

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

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

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

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

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

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

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

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

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

Appendix 1. Considerations About Which VMT to Count

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

Background on Estimating Vehicle Miles Traveled

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

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

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

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

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

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

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

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

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

Trip- and Tour-based Assessment of VMT

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

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

Assessing Change in Total VMT

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

Using Models to Estimate VMT

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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