California State University

Transportation Impact Study Manual

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FEHR PEERS

Table of Contents

List of Tables

Appendix

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1. Background Information

1.1 Manual Purpose

In November 2012, the California State University (CSU) issued a Transportation Impact Study Manual (2012 CSU Manual) to assist the campuses within the CSU system in addressing transportation-related impacts under the California Environmental Quality Act (CEQA). At that time, level of service (LOS), which is based on delay to single occupant vehicles, was the metric utilized to evaluate CEQA impacts to the transportation system. Following issuance of the 2012 CSU Manual, the California legislature approved Senate Bill (SB) 743, which directed the California Office of Planning and Research (OPR) to update the CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, sections 15000-15387) and identify an alternative metric for determining significant impacts.

The OPR process, described in greater detail below, identified use of Vehicle Miles of Travel (VMT) as the new metric in assessing impacts associated with vehicle travel. VMT is calculated, generally, by multiplying the number of trips generated by a project by the average distance those trips traveled. Furthermore, VMT can be normalized on a per person basis to evaluate the efficiency of that trip (e.g. the lower the VMT per person, the more efficient travel is).

In December of 2018, the Natural Resources Agency finalized their rule making process and released an update to the CEQA Guidelines to officially change the transportation analysis metric from LOS to VMT. It should be noted that the CEQA Guidelines do recognize the time required for lead agencies to change their analysis requirements and develop implementation procedures to complete the assessment; as such, lead agencies have until July of 2020 to complete the updates to their impact analysis guidelines to complete the transition from LOS to VMT.

CEQA *refers to the California Environmental Quality Act. This statute requires analysis and identification of potentially significant environmental impacts associated with state or local action, including approval of new development or infrastructure projects. The process of identifying these impacts is typically referred to as the environmental review process.*

LOS *refers to "level of service," a metric that assigns a letter grade to road network performance. The typical application of LOS is to measure the average amount of delay experienced by vehicle drivers at an intersection during the most congested time of day and to assign a report card range from LOS A (fewer than 10 seconds of delay) to LOS F (more than 80 seconds of delay). Under prior CEQA criteria, a certain increase in LOS results in a significant impact, which must be mitigated.*

VMT *refers to "vehicle miles traveled," a metric that accounts for the number of vehicle trips generated by a project and the length or distance of those trips. For transportation impact analysis purposes, VMT is generally expressed as*

Given the recent revisions to the CEQA Guidelines, this manual replaces the 2012 CSU Manual to provide guidance in the preparation of transportation impact assessments for projects on CSU campuses, including all lands owned by CSU, consistent with the CEQA Guidelines update. The manual can be used for projects ranging from campus master plan updates to individual campus projects, and for public-private development.

The CSU Transportation Impact Study Manual is subject to revision due to future changes in policies, guidelines or statutes.

1.2 SB 743 Background

In 2013, Governor Jerry Brown signed SB 743 into law, thus significantly changing the CEQA transportation impact analysis procedures. SB 743 required OPR to develop a new transportation analysis alternative to LOS that "promotes the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."[1] *The changes in impact analysis methodology include the elimination of auto delay, LOS, and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant vehicle-related impacts.*

As proposed by OPR and approved by the Natural Resources Agency, auto delay has been eliminated as an environmental impact under CEQA. Additionally, the process identified that VMT is generally the most appropriate measure of vehicle-related transportation impacts under CEQA. [2]

In December 2018, OPR released the current version of the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (Technical Advisory) to provide advice and recommendations to CEQA lead agencies on how to implement the SB 743 changes. SB 743 requires analysis of a project's anticipated generation of VMT rather than its location-specific roadway operational impacts (i.e., LOS impacts). The Technical Advisory also recommends a variety of travel demand management mitigation strategies to mitigate a project's significant VMT impacts.

Given the departure from LOS to VMT, this manual provides instructions for analyzing transportation impacts relative to VMT, applicable significance thresholds, and recommended mitigation measures.

VMT, as defined by OPR, is normalized by dividing it by the population, employment, number of households, service population (population plus employment), and/or some other metric that effectively utilizes VMT as a measure of travel efficiency (e.g. the lower the VMT per person, the more efficient their travel patterns

[1] Public Resources Code Section 21099(b)(1)
[2] The revised Guidelines were adopted by the Natural Resources Agency in December 2018, subsequently approved by the Office of Administrative Law, and effective as of January 3, 2019.

are). As such, the shift to VMT is essentially a shift toward measuring transportation efficiency for each project.

1.3 When is a VMT Study Needed

Numerous projects are considered to be VMT reducing or make travel more efficient. One example of this would be local serving retail that is less than 50,000 sq. ft. In this example, the retail would serve local trips and likely intercept existing trips on the system that need to travel a greater distance for those local services (thus reducing average trip length and reducing VMT). Similar local-serving retail projects are not required to complete a VMT assessment.

For CSU projects, examples of projects that would be screened from VMT assessment due to their VMT reducing nature (i.e., no further analysis required) are noted below:

- Local serving retail that is less than 50,000 sq. ft., or retail that is located wholly within the core of a CSU campus;
- Childcare centers that serve students, faculty, and staff families;
- Student services facilities;
- Parking facilities that serve the campus demand and do not create "too much parking[3]";
- Healthcare centers serving students, faculty, and staff; and
- Recreation/fitness/wellness centers that serve students, faculty, and staff.
- Projects generating less than 110 vehicle trips per day, as noted in the OPR Technical Advisory[4].

For all other project types, a VMT assessment would be required, as outlined in this manual. At the outset of the project, a memo from the transportation consultant shall be provided at the beginning of the CEQA process which identifies the manner in which the Transportation Study Impact Manual will be implemented for the project.

[3] The concept reflects the notion that, if you over park a site, then it is easier/more convenient to drive and VMT per person would increase. Therefore, if the parking per FTE is not increased, the ability to drive and park remains constant, or possibly reduced, and VMT is not induced.

[4] 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. (OPR Technical Advisory, 2018)

1.4 Chancellor's Office Coordination

Campuses embarking on any transportation impact assessment should coordinate with the Chancellor's Office to solicit input on the scope of work, assessment approach, and to verify that the latest CSU and CEQA Guidelines are being utilized.

One potential area of coordination involves whether to continue conducting LOS analysis. Although LOS is no longer required for CEQA evaluation, many cities, counties, or other agencies (including Caltrans) may still request LOS assessment as part of a campus project. In those instances, the campus shall contact the Chancellor's Office to assist in the strategy of coordinating with those agencies and their requests.

2. Report and Analysis Requirements

This chapter describes the required analytical components that shall be included in the transportation impact study (TIS). In addition to identifying the organization and information required for the report, this chapter also summarizes the analysis methodology and thresholds that shall be utilized to determine if an impact is significant.

2.1 CEQA Checklist

As noted in Chapter 1, the CEQA Guidelines have been updated related to potential transportation impacts.

CEQA Guidelines Appendix G includes a series of questions to be answered to determine if a project has the potential to result in a significant impact. The questions related to transportation impacts are listed below and are based on the CEQA Guidelines as updated in December 2018 (Appendix G, XVII. Transportation):

Would the project:

a) *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*

b) *Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?*

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

d) *Result in inadequate emergency access?*

CEQA Guidelines Section 15064.3 provides in full:

(a) Purpose.

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

(b) Criteria for Analyzing Transportation Impacts.

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

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

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

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

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

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

The remainder of this chapter provides guidance on addressing each of the noted CEQA checklist items consistent with Section 15064.3 of the CEQA Guidelines.

2.2 Report Requirements

This section of the Manual outlines the requirements for completing a TIS for projects proposed within the CSU system. In general, the study should include the following organization:

- Chapter 1 – Project Description and Project Setting
- Chapter 2 – Significance Criteria, Analysis Methodologies, and Results
- Chapter 3 – Impact Findings and Mitigation Measures
- Chapter 4 – Site Access and On-Site Circulation Assessment

2.2.1 Project Description and Project Setting

The Project Description and Project Setting provide the context for determining the study area for the impact analysis. The TIS study area refers to the geographical boundary within which the project's impacts on the transportation systems will be assessed. The study area should be viewed as the "area of influence" of a project. The extent of a TIS study area depends on the location (setting) and size/type of the project (description), and the technical questions anticipated to be asked by decision makers and the public. Defining the study area needs to be done through a process that results in substantial evidence (facts, analysis, etc.) to support the study area delineation. The boundary should extend as far as needed to accurately evaluate the significant impacts of the project and ensure that trip length information is not truncated at geographic boundaries (e.g. the entire trip length shall be accounted for).

Consideration of all travel modes and facilities (i.e., transit, pedestrian, bicycle, vehicle, rail, etc.) should take place when selecting the study area boundary. Guidance from CSU shall be obtained on the boundary delineation.

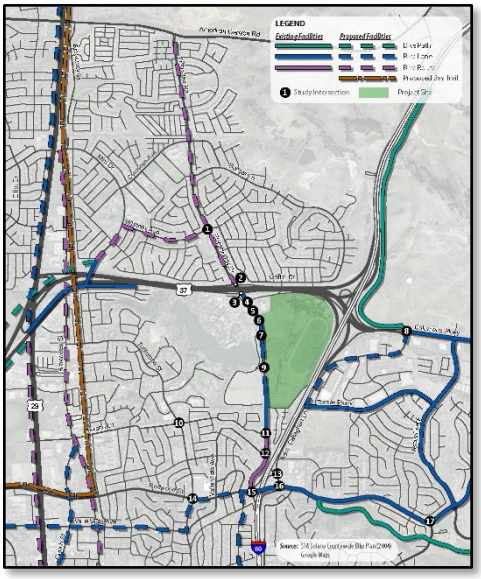
- The study area shall extend a sufficient distance from the project site to identify all potentially significant impacts, as supported by substantial evidence.
- Additional facilities may be studied based on circumstances unique to the site. TIS preparers shall consult with CSU to determine whether to consult with the host city or county early regarding any additional study locations based on local or site-specific issues.

2.2.1.1 Roadway Network Description

The TIS shall provide a map that shows the Project site and identifies transportation facilities in the study area. The TIS shall provide a brief description of the study area roadways near the site. At a minimum, the TIS should state the number of travel lanes, direction of travel, the extents of each roadway, and the relation to the Project site. The TIS can also describe typical street cross-sections and other aspects of the streets such as on-street parking, bicycle and pedestrian facilities, median treatment, speed limit, etc. For state facilities, the latest available average daily traffic (ADT) counts near the Project site should also be reported[5].

2.2.1.2 Bicycle and Pedestrian Facility Description

The description and analysis of bicycle and pedestrian facilities will vary for each campus depending on the availability and usage. It is expected that urban locations will have more pedestrian and bicycle travel facilities and will require more detailed analysis than non-urban locations. At a minimum, the TIS shall provide the following information:



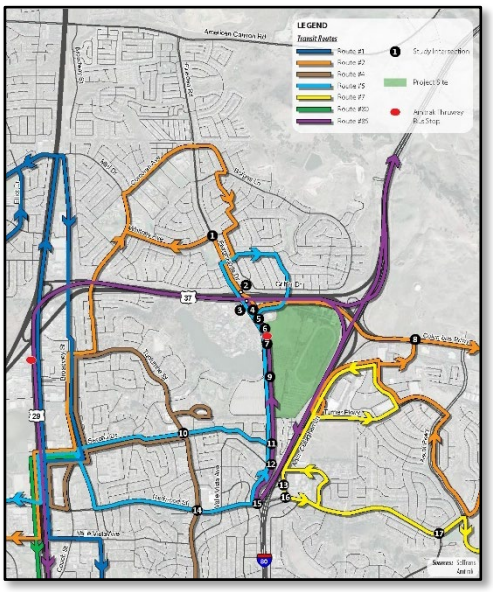
- A qualitative description of existing bicycle and pedestrian facilities in the Project vicinity. This would consist of identifying the location and type of bicycle facilities, presence of sidewalks, and the level of usage.
- A map showing existing and planned bicycle facilities in the study area.
- A description of different bicycle facility types. The local jurisdiction's bicycle plan should be consulted for a description of the facility types.
- A more detailed discussion of existing bicycle and pedestrian facilities and activities in the Project vicinity, including identification of nearby pedestrian and bicycle corridors. Major deficiencies in the existing system, such as street segments with missing sidewalks, obstacles, or non-Americans with Disabilities Act (ADA)-compliant facilities, should also be identified.

[5] Caltrans traffic counts can be found at traffic-counts.dot.ca.gov/

- A discussion of bicycle and pedestrian access between the Project site, nearby transit stops, and land uses that generate a high number of pedestrians or bicyclists (i.e., parking facilities, other campus buildings).
- A qualitative discussion based on observations of bicycle and pedestrian activity in the study area and at study area intersections.
- A description of bicycle parking in the Project vicinity, which may include location, type and usage of bicycle parking (racks, lockers, etc.)
- Graphics showing pedestrian and bicycle volumes in the study area and/or at study area intersections, if available.

2.2.1.3 Transit Facilities Description and Analysis

The description and analysis of transit facilities will vary for each site depending on the transit service and ridership in the Project area. At a minimum, the TIS shall provide the following:



- A qualitative description of transit service in the Project area, including campus shuttle service, local bus service, and regional bus, trolley, or rail service (such as Amtrak, or Bay Area Rapid Transit (BART) in the Bay Area, or the San Diego Trolley).
- A map showing transit routes within two miles of the Project site.
- Information on route operations, including hours of operations, time between stops of transit vehicles (headways), vehicle capacities, and load factors (i.e., a capacity analysis based on passenger counts).
- Information on bus stops near the Project site, such as bus stop locations.

2.2.2 Significance Criteria, Methodologies, and Results

The significance criteria refer to the criteria utilized to determine whether the transportation-related impacts of the proposed project would be significant within the meaning of CEQA. The significance criteria set forth below have been developed consistent with the CEQA Appendix G checklist questions, noted above and shall be utilized to evaluate potential project impacts. Table 1, Significance Criteria, lists the criteria to be applied in assessing transportation-related impacts; that is, the project would result in significant impacts if it would trigger any of the listed criteria.

Table 1: Significance Criteria

Impact Categories	CSU Significance Criteria
Plan Conflict	The project would conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities.
VMT Impacts[6]	The project would result in a VMT-related impact as described below
Hazard Impact	The project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
Emergency Access Impact	The project would result in inadequate emergency access.

CEQA Checklist Questions:

a) Will the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

b) Will the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

c) Will the project substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?

d) Will the project result in inadequate emergency access?

2.2.2.1 Evaluation Approach and Methodology

2.2.2.1.1 Plan Conflicts

The TIS should identify plans, ordinances, or policies addressing the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths. The consistency of a proposed project with the policies and standards shall be assessed to inform the impact conclusions using the significance criteria identified in **Table 1**. The various agencies and policies that will apply to most CSU projects are described below.

[6] Refer to Table 2: VMT Thresholds and Measurements by Project Type

CSU Campus Policies and Programs

The TIS should list the relevant circulation plans and other relevant transportation information identified in the current Campus Master Plan. A description of the Campus Travel Demand Management Plan (if applicable), current programs, and effectiveness (i.e. commute club membership, average carpool occupancy, changes in bicycle use, etc.) shall be included in this section.

Local Agency Policies and Standards

For information purposes, the TIS should list the transportation related programs, plans, and policies published in the adopted General Plan of the host city or county. The most relevant policies are those regarding planned improvements, including new roadways and new pedestrian and bicycle facilities, and policies and programs to enhance and encourage non-auto mode usage. Note that as a state agency, CSU is not required to comply with local plans, policies or regulations).

Congestion Management Program

The TIS must evaluate the Project's consistency with the relevant Congestion Management Program (CMP) requirements, where applicable, related to transit, bicycles, pedestrians, and other non-automotive uses. If the local CMP only requires LOS assessment for project evaluation, then that assessment shall not be included in the TIS as it is no longer required by CEQA upon implementation of SB 743. However, all other non-automotive analyses required by the CMP shall be assessed in the TIS to determine whether the project would conflict with the CMP.

2.2.2.1.2 VMT Impacts

This section describes the methodology and significance criteria for evaluating VMT impacts for CSU projects.

Screening Criteria

Please note that this section describes potential ways to screen projects from VMT assessment. However, projects that may be screened from VMT assessment may still need to address other assessments to comply with CEQA requirements.

Projects Screened From VMT Assessment

As noted in Chapter 1, the following CSU project types would generally not be required to complete a full VMT assessment; that is, identifying and describing the project as falling within one of these categories would constitute a less than significant impact related to VMT for CEQA purposes:

- Local serving retail that is less than 50,000 sq. ft., or retail that is located wholly within the core of a CSU campus;
- Childcare centers that serve students, faculty, and staff families;
- Student services facilities;
- Parking facilities that serve the campus demand and do not create "too much parking[7]";
- Healthcare centers serving students, faculty, and staff;
- Recreation/fitness/wellness centers that serve students, faculty, and staff; and
- Projects generating less than 110 vehicle trips per day, as noted in the OPR Technical Advisory[8].

Please note that, for those project listed above, the transportation consultant must still use engineering judgement to in completing the screening; that is, if these project types have the potential to increase VMT per person for some unique reason, then the project should undertake a full VMT assessment.

Projects Screened From Project Level VMT Assessment

In addition to the project types identified above, screening from project-level assessment may be applicable to certain other types of projects that do not meet the above project type on the basis that certain characteristics (e.g. location) are such that it can be assumed such project types would not result in significant VMT impacts. These project types and screening attributes are noted below as they have the *potential* to decrease the number of trips and/or the trip length around their development, further decreasing VMT. Importantly, however, this screening exemption is not absolute and if the transportation consultant reaches a conclusion that the project is appropriately screened from project-level analysis, it is essential that the study include substantial evidence supporting the conclusion. Additionally, although these projects would be screened from project level VMT assessment, they would still need to complete a *cumulative* level assessment to determine consistency with the Regional Transportation Plan (RTP) produced by the local Metropolitan Planning Organization (MPO) or Regional Transportation Planning Agency (RTPA).

- Development in Transit Priority Areas (TPA[9]);

[7] The concept reflects the notion that, if you over park a site, then it is easier/more convenient to drive and VMT per person would increase. Therefore, if the parking per FTE is not increased, the ability to drive and park remains constant, or possibly reduced, and VMT is not induced.

[8] Note – this screening criteria is described in OPR's technical advisory. If using this threshold, the transportation consultant should be aware that this is a trip-based benchmark; not a VMT-based benchmark. The user should review the trip length tied to the project to ensure that those would not be considered abnormally lengthy which would constitute potential concern related to CEQA significance.

[9] TPAs are defined as development located within a one-half mile of either an existing major transit stop (defined as a rail transit stop, ferry terminal served by either bus or rail transit, or the intersection of two or more major bus routes with 15-minute or better headways during the peak commute periods) or a stop along an existing high quality transit corridor (defined as a fixed route bus service with headways of 15-minutes or better).

- Development in a low-VMT generating area of the city, sub-region, or region; or
- On-campus housing serving students, faculty, and staff.

TPAs should be identified by the transportation consultant for applicability in the area. Low-VMT generating areas of the city, sub-region, or region can be identified by the transportation consultant by reviewing the VMT per person for the traffic analysis zone (TAZ[10]) for the referenced region. If the proposed land use is consistent with what is currently in the study area and the TAZ is identified as generating lower than existing VMT (compared to the city, sub-region, or regional VMT per person average), then the project can be screened from project level assessment.

As previously noted, although the project types described above can be screened from *project* level assessment, the proposed project needs to be assessed for its consistency with the RTP assumptions. If the project is not consistent with the RTP assumptions, then it would be screened out from project-level assessment but would require assessment of the effect upon regional or city VMT (i.e., it would require a cumulative assessment).

Some agencies (such as SACOG in Sacramento) have a checklist to determine RTP consistency and the campus should review local requirements for determining RTP consistency. If a checklist is not available, then consistency must be verified. To verify consistency, the land use information and assumptions in the local or regional travel demand forecasting model[11] should be reviewed.

Projects Requiring a Full VMT Assessment

For projects that do not meet any of the screening criteria described above, a transportation impact study including a full VMT assessment will be required. To complete this assessment, the traffic consultant will be required to determine if the project-generated VMT per service population is less than 15% of the existing regional, sub-regional, or citywide VMT per service population to determine whether the project would result in any project-related significant VMT impacts. The consultant must also evaluate the project's *effect* on VMT to determine if the project would increase or decrease the forecasted regional total VMT, i.e., would result in significant cumulative impacts.

For those projects not screened from further analysis, **Table 2** summarizes the VMT significance thresholds to be applied in assessing impacts associated with CSU projects; separate thresholds are identified for

[10] TAZ refers to a specific geographic location related to land use inputs into the regional or local travel demand forecasting model.

[11] The appendix contains a list of RTP assumptions related to campus use as of August 2018 to assist in verifying RTP consistency. Although this information has been summarized to assist staff with a consistency determination, the user should verify the land use inputs independently for accuracy.

application to project-level and cumulative impacts. These thresholds are consistent with the thresholds set forth in the OPR Technical Advisory, which recommends a significance threshold of 15% below existing VMT for project-level impacts associated with specific projects when measuring VMT on a per person or per capita basis (i.e., the project's travel efficiency should be 15% better than existing travel efficiency).

Table 2: VMT Significance Thresholds

Impact Categories	CSU Significance Thresholds
Project Level Impacts	➢ Residential Projects: VMT / Resident exceeds threshold of 15% below existing regional, sub-regional, or citywide VMT / Resident ➢ Office/Industrial: VMT / Employee exceeds threshold of 15% below existing regional, sub-regional, or citywide VMT / Employee ➢ Mixed-Use: VMT / Service Population[12] exceeds threshold of 15% below existing regional, sub-regional, or citywide VMT / Service Population ➢ Commuter Student Growth: VMT / Commuter Student exceeds threshold of 15% below existing regional, sub-regional, or citywide VMT / Commuter Student ➢ University Employment: VMT / Employee exceeds threshold of 15% below existing regional, sub-regional, or citywide VMT / Employee
Cumulative Impacts	➢ Residential Projects: VMT / Resident under the "with project" condition exceeds the Citywide, regional or sub-regional VMT / Resident identified under the RTP/SCS condition ➢ Office/Industrial: VMT / Employee under the "with project" condition exceeds the Citywide, regional, or sub-regional VMT / Employee identified under the RTP/SCS condition ➢ Mixed-Use: VMT / Service Population[2] under the "with project" condition exceeds the Citywide, regional, or sub-regional VMT / Service Population identified under the RTP/SCS condition ➢ Commuter Student Growth: VMT / Commuter Student under the "with project" condition exceeds the Citywide, regional or sub-regional VMT / Commuter Student identified under the RTP/SCS condition ➢ University Employment: VMT / Employee under the "with project" condition exceeds the Citywide, regional, or sub-regional VMT / Employee identified under the RTP/SCS condition

[12] Service population is typically defined as population plus employment. For campuses, service population is defined as population plus employment plus students. The transportation consultant shall not double count resident students twice in this evaluation (i.e., shall not count students that also live on campus).

VMT Methodology

As previously noted, VMT is defined as the number of trips generated by a project multiplied by the length of each trip. There are multiple methodologies that can be used to calculate VMT for a project, so special attention must be paid to how the project VMT is estimated.

VMT assessment under SB 743 is an efficiency metric, essentially evaluating the efficiency of the land use and transportation system by comparing the VMT per person that would result under the proposed project to the existing region or city VMT per capita. As such, the VMT methodology must be able to calculate the VMT for the project utilizing the exact same methodology used to estimate the VMT at the regional, sub-regional, or citywide scale so that an "apples-to-apples" comparison can be made.

The "best" tool presently available to estimate VMT at all CSU campus locations is the local or regional travel demand forecasting model. The travel demand models estimate trip generation, distribution, and assignment by land use type. Additionally, given the local or regional context of the project, the travel demand model can be utilized to develop the regional or citywide comparative efficiency metrics related to VMT.

As noted later in this manual, consistent with the OPR Technical Advisory for SB 743 implementation, VMT should be normalized as an efficiency rate for evaluation, the transportation consultant isn't evaluating the total VMT generated by the project; rather they are comparing the efficiency of travel on a per person basis to local, sub-regional, or regional travel efficiency averages. Depending on the proposed use being evaluated, the normalization should focus on specific types of VMT (identified as VMT by trip purpose) and should be normalized to the appropriate capita denominator (employment for employment uses, population for residential uses, students for educational uses, etc.). For example, increased employment uses should focus on home-based-work trip purposes estimated from the model and would be normalized per employee; home-based-work trips are those trips made from home to work and back home. This "commute trip" VMT estimate would be compared to the regional, sub-regional, or citywide VMT for the same trip purpose per employee to evaluate potential impacts of the project.

Please note that some travel demand models have limitations related to the application of isolating VMT by trip purpose or have constraints related to the model's ability to fully account for existing VMT in the model study area (especially if the project is located near the near the model's geographic boundary). As such, the traffic consultant shall use professional judgment to adjust the model results (if needed) in order to provide an accurate accounting of VMT per person, as required in **Table 3, VMT Normalization Guidance**.

Table 3: VMT Normalization Guidance

Project Type	VMT Trip Purpose Type[1, 2, 3, 4, 5, 6]
University Commuter Student Growth	Home-Based Other (Attraction)
University Master Plans and Other Mixed-Use Projects where new VMT would be generated (including FTE increases or other projects that include multiple uses)	Home-Based Work (Production & Attraction) + Home-Based Other (Production & Attraction) + Non-Home-Based (Production & Attraction)
University Employment	Home-Based Work (Attraction)
Market-rate or non-university housing	Home-Based Work (Production) + Home-Based Other (Production)
Student/Faculty/Staff Housing	Home-Based Work (Production & Attraction) + Home-Based Other (Production & Attraction)
Office/Industrial or off-campus commercial/retail greater than 50,000 sq. ft. (typically implemented as a Public-Private Partnership project)	Home-Based Work (Attraction)
Events and Recreational Projects[7,8]	Home-Based Other (Attraction)
Development located in a Transit Priority Area	See categories above for the most appropriate metric

Notes

1. Home-Based Work trips are trips in which either the origin or destination of the trip is the traveler's home, and either the origin or destination of the trip is the traveler's workplace.
2. Trip Production is the home end (either the origin or destination) of a Home-Based trip, or it is the destination of a Non-Home-Based trip.
3. Home-Based Other trips are trips in which either the origin or destination of the trip is the traveler's home, and either the origin or destination of the trip is a location other than the traveler's workplace, such as a place to buy goods or services, or a place to engage in social or recreational activities.
4. Trip Attraction is the non-home end (either the origin or destination) of a Home-Based trip, or destination of a Non-Home-Based trip.
5. Service Population is comprised of the employment population plus student population plus any additional residency not captured in the noted populations (e.g. faculty or staff housing could have spouses or children living there that are not already accounted for in the employment or student population).
6. Non-Home-Based trips are trips in which neither the origin nor destination of the trip is the traveler's home.
7. Examples of these types of projects include hotels, arenas, performing arts centers, and conference centers.
8. In the context of events and recreational projects, production-based trips are those generated by the residential land uses. Attractions, on the other hand, are trips that are destinations and are usually generated by employment or educational uses. Isolating these trip types allows the analyst to isolate the specific trip types accordingly.

To be consistent with current best practices, the transportation consultant shall review the travel demand model to ensure that it meets the following three criteria to be deemed acceptable for use in the assessment:

1. The scale of the model should match that of the project to ensure that the model accounts for all regional influence areas and accounts for the total VMT generated by the project (i.e., confirm it does not artificially truncate VMT information due to a small geographic boundary).
2. The model should be calibrated and validated within the study area by the transportation consultant related to VMT estimation. The model's validation in the study area should be verified for each forecast time period (i.e., daily, AM peak hour, PM peak hour, etc.) and for each mode analyzed. The model trip length information and VMT estimates should also be compared to available data to verify accuracy. The model validation should include static and dynamic tests. Static validation tests should include those specified in Travel Forecasting Guidelines (Caltrans, 1992), and Model Validation and Reasonableness Checking Manual (FHWA, 1997). Dynamic tests verify that the model contains an appropriate level of sensitivity related to the types of transportation network or land use changes associated with the project.
3. The model's land use or socioeconomic forecasts should be tested for reasonableness by the transportation consultant. Models are used to forecast travel demand for a specific horizon year (i.e., 20 years). The land use and socioeconomic forecasts need to match the horizon year and be based on reasonable market conditions that reflect past and future development trends for the specific study area. Additionally, the model needs to include any reasonably foreseeable development projects.

Project Generated VMT Assessment (Project Impacts)

To estimate the project generated VMT, the travel demand model should be run for the base year and future year condition, isolating out the VMT generated by the project as noted in **Table 3**. Since the project generated VMT should reflect the opening year of the project for individual projects or the buildout year for master plan projects, the traffic consultant must interpolate the VMT estimates between the base year and future year model results assuming linear interpolation (typically, a model's base year is several years prior to the opening year of the project). The same interpolation and model runs shall be utilized to estimate citywide, regional, or sub-regional VMT that is to be utilized for comparative purposes.

Using the model in this fashion, the transportation consultant shall complete the following assessment:

- Existing Conditions – existing VMT per capita for the citywide, regional, or sub-regional area
- Project Conditions – VMT per capita for the proposed project to be compared to the Existing Conditions
- Cumulative No Project Conditions – RTP-consistent VMT per capita at the citywide, regional, or sub-regional level
- Cumulative Plus Project Conditions – VMT per capita at the citywide, regional, or sub-regional level

Project Effect on VMT Assessment (Cumulative Impacts)

For the cumulative assessment, the transportation consultant shall evaluate the project's *effect* on VMT. To undertake this assessment, the user must input the project into the travel demand model and determine if the project would result in an increase or decrease in the regional, sub-regional, or citywide VMT per capita.

The traffic consultant may need to complete a redistribution of land uses to ensure that the "no project" assessment and the "with project" assessment contain the same land use control totals for the city, region, or sub-region, especially if the project is large enough that it would affect land use absorption elsewhere in the city, region, or sub-region (e.g. a proposed housing project on the campus does not change the regional population estimates; it just reallocates where they live). The consultant also will need to work with the Chancellor's Office to identify the most appropriate method of land use allocation, but the following approaches are considered acceptable for completing the cumulative assessment:

- Add the proposed land use to the travel demand model (note, this will not maintain regional control totals, but should produce appropriate results for most projects); or
- Utilize an economist to identify where else in the local region development would not occur with implementation of the project to maintain regional land use control totals (this would be appropriate for campus development that includes significant housing (i.e., more than 1,000 housing units or employees that were not anticipated in the RTP); or
- The traffic consultant would review all Traffic Analysis Zones (TAZs) within a five- to ten-mile radius of the project site and reduce growth proportionately across all TAZs showing growth to maintain regional land use control totals.

Fehr & Peers completed a "test case" for VMT assessment as part of manual preparation using the CSU San Bernardino master plan as the test project to evaluate through the VMT methodology and significance criteria. The results of this test case are summarized in a presentation included as Appendix C.

2.2.2.1.3 Hazard Impacts

The transportation consultant should review the project and determine if there is a specific design component that would create a hazardous condition. Typically, this review looks at project geometrics and the consultant would provide a professional opinion related to modal conflicts and/or consistency with typical design standards.

Additionally, the transportation consultant should review the land use context where the project is expected to contribute a different mix of travel such that the volume, mix, or speed of traffic was not anticipated as part of the original transportation network design (applies to all modes). Increasing trips on a facility that

was not originally designed for that volume, mix, or speed of traffic is another important consideration that should be addressed.

2.2.2.1.4 Emergency Access Impacts

The transportation consultant shall work with the campus to contact emergency services (fire and/or police) and solicit their input related to emergency accessibility for the project site. Additionally, CSU projects are required to follow the State University Administrative Manual (SUAM) which requires the State Fire Marshal to review all projects prior to implementation. As such, the consultant should reference the university requirements related to the SUAM which would result in a less-than-significant finding related to emergency accessibility impacts.

2.3 Impact Findings and Mitigation Measures

This section of the Transportation Impact Study shall summarize the results of the impact analysis (using the methodologies and significance criteria and thresholds identified above).

For significant impacts, feasible mitigation measures shall be recommended. **Table 4, Potential Mitigation Measures**, lists those potential mitigation measures that shall be considered by the transportation consultant and campus; the measures are listed by corresponding impact category. The specific mitigation measures to be selected will depend on the specific impact identified.

Table 4: Potential Mitigation Measures

Impact Category	Potential Mitigation Measures
Plan Conflict	➢ Provide for access to, from, and through the development for pedestrians and bicyclists ➢ Designate Class I bicycle paths, Class II bicycle lanes, and other appropriate facilities on-campus ➢ Provide bus turn-outs, bus shelters, additional bus stops, and park-and-ride lots ➢ Address planned transit facilities in project design, if feasible ➢ Coordinate with local transit providers to improve service to the area

VMT Impacts	➢ Revisit project design features and or proposed land uses with an eye towards reducing project trips or reducing trip lengths ➢ Look for other measures to reduce trip lengths or the number of trips generated through Transportation Demand Management (TDM) measures (see additional guidance below) ➢ If a regional program is available to reduce VMT, a fair-share payment toward that program shall be paid if all significant impacts have not been mitigated through all other feasible mitigation measures
Hazard Impact	➢ Optimize location of access driveway(s) ➢ Improve sight distances at intersections and driveways to standard engineering practice ➢ Provide for yield or stop control ➢ Restrict certain turn movements
Emergency Access Impact	➢ As noted above, projects would be required to be reviewed by the State Fire Marshal as part of the SUAM procedures. As such, no significant emergency access impacts are anticipated and, therefore, no mitigation would be required.

VMT Mitigation – Transportation Demand Management Strategies

For those projects that result in significant VMT-related impacts, implementation of a TDM mitigation measure represents potentially feasible mitigation to assist in reducing such impacts, if not fully eliminating the impacts. In preparing a TDM mitigation measure, each campus shall consider the following VMT reduction strategies to mitigate those impacts:

- Revisit project design features and or proposed land uses with an eye towards reducing project trips or reducing trip lengths. In a master plan context, examples include: increasing on-campus housing (thereby reducing commuter trips to the campus), limiting parking on the campus to discourage vehicle trips, coordinating with regional transit agencies to expand transit service to the campus, improving bicycle/pedestrian facilities both on- and off- campus, and other measures that decrease the need and/or desirability for people to drive to/from the campus.
- After all feasible TDM strategies have been included within the recommended mitigation measure, if there are remaining (i.e., residual) significant VMT-related impacts, the transportation consultant needs to determine whether there are any fee (i.e., fair-share) programs specific to VMT reduction that have been adopted and are applicable to CSU, generally, and the campus geographic area, specifically. Currently, there are very few such programs available to reduce VMT significant impacts

through a fair-share payment program (only a handful of VMT-based nexus programs exists in the state). If a valid regional program applicable to CSU is available to reduce VMT at the time the transportation consultant is conducting the VMT analysis, and impacts have not been reduced to less than significant with implementation of other VMT-reduction strategies, then, following consultation with the Chancellor's Office and General Counsel, a fair-share payment toward that program in an amount necessary to reduce the remaining impacts to less than significant shall be considered.

- Several regional agencies are exploring a VMT mitigation banking system that, if implemented, could be utilized to off-set significant VMT-related impacts. Although such a banking system currently does not yet exist in the state, this potential mitigation measure could exist in the future, and the transportation consultant must research the then-present availability of any such programs, with a related report to the campus and Chancellor's Office.

In light of the fact VMT mitigation programs have not yet been developed in most areas of the state, the mitigation measure most available that can affect VMT on campuses is implementation of a comprehensive TDM program. In this regard, CSU has developed a comprehensive TDM manual that provides a framework for development of a TDM program tailored to the setting of each campus.

Anticipated VMT reductions associated with several TDM strategies presently can be calculated using information from the California Air Pollution Control Officers (CAPCOA) guidance or other approved VMT calculation methodology.

Full implementation of all feasible TDM measures will mitigate significant VMT impacts to the extent feasible. TDM measures, which likely will be required in many circumstances, should be considered early in the project development process, along with the costs of implementation of such measures.

TDM Measure
Parking
Student, Faculty and Staff Permits
Daily Parking Pricing
Short Term/Hourly Parking
Preferential Parking for Carpools and Vanpools
Transit
Reduced/Subsidized Transit Fares
Universal Transit Pass
Shuttle Services
Walking/Bicycling
Walking and Biking Incentives
Bicycle Parking and Showers
On-site Bicycle Maintenance
Bikesharing
Other
On Campus Amenities
On Campus Housing
Guaranteed Ride Home Program (for Employees)
Carpool and Vanpool Incentives
Marketing and Educational Campaigns
Carsharing
Pre-tax Commuter Benefits (for Employees)
Ridematching Program

2.4 Site Access and On-Site Circulation

The analysis of on-site circulation is required to identify the adequacy of the site design. The level of detail in the analysis is to match the level of detail provided in the project site plan and will also be affected by the project type – i.e., a Master Plan update will be reviewed more broadly relative to campus-wide circulation

system requirements, whereas a new building or parking structure can receive a more localized and operational review.

The site plan review and circulation assessment should include the following considerations. This portion of the review should be completed by a registered State of California Civil or Traffic Engineer.

- Existence of any current traffic hazards in the local area such as high-collision locations.
- Applicability of context-sensitive design practices compatible with adjacent neighborhoods or other areas that may be impacted by the project traffic.
- Close proximity of proposed site driveway(s) to other driveways or intersections that may create a traffic hazard.
- Adequacy of corner sight distance or stopping sight distance at project access points.
- Adequacy of on-site vehicle, bicycle, and pedestrian circulation, provision of safe pedestrian paths between residential areas and academic buildings and other campus destinations, and between the site and nearby transit facilities.
- Project site design, including project construction activities, resulting in inadequate emergency access or response times.

3. Agency Coordination and Guidance

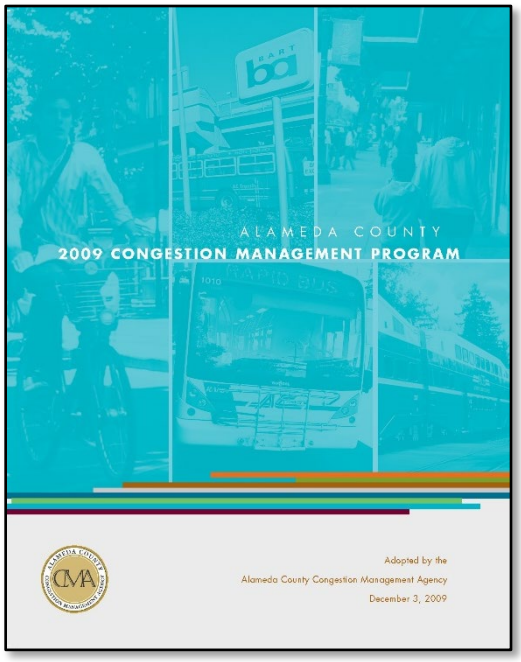
Campuses embarking on any transportation assessment should coordinate with the Chancellor's Office to solicit input on the scope of work, process, and to verify that the latest CSU and CEQA Guidelines are being utilized.

As previously noted, although LOS is no longer required for CEQA evaluation, many cities, counties, or other agencies (including Caltrans) may still request LOS assessment as part of a campus project. In those instances, the campus shall contact the Chancellor's Office to assist in the strategy of coordinating with those agencies and their requests.

The remainder of this chapter summarizes key agencies with which coordination may be required when preparing a TIS.

3.1 Congestion Management Agency

In 1990, the State of California passed Proposition 111, which requires urban counties to establish Congestion Management Agencies (CMA) to conduct certain transportation-related functions, including oversight of a portion of the state gas tax. CMAs are directed by boards consisting of representatives from the applicable county and each city within the county. The CMAs are required to maintain and periodically update a Congestion Management Program (CMP), consisting of the following elements:



- Traffic LOS standards applicable to a designated system of State highways and principal arterial streets;
- Transportation System Performance Measures to evaluate current and future multi-modal system performance for the movement of people and goods;
- A seven-year capital improvement program (CIP) containing projects to maintain or improve the performance of the multi-modal system for the movement of people and goods;
- A set of procedures to analyze the impacts of land use decisions made by local jurisdictions on regional transportation systems; and
- A travel demand element that promotes transportation alternatives to the single-occupant vehicle.

In addition to preparing, adopting and implementing a CMP, each CMA includes a countywide computerized travel demand model based on a uniform database. The CMA must also establish procedures for preparing Deficiency Plans when LOS standards are violated.

CMP requirements vary from county to county, but generally require assessment of project impacts on the primary roadway network (freeways and major arterials), using a trigger for impact assessment based on project size or number of trips generated; note that certain counties, including San Diego, have opted out of the CMP program. The CMP performance objectives are often different than those maintained by a local city or Caltrans, reflecting a county-wide perspective on congestion management and multi-modal transportation system operations. For example, a corridor-level metric such as average travel speed or vehicle density may be used as opposed to individual intersection or roadway segment LOS.

Given the direction of SB 743 to eliminate LOS from CEQA documents and utilize VMT for determining CEQA impacts, each campus will need to review the requirements identified within the CMP to determine applicability to the campus and corresponding TIS. If applicable requirements only focus on LOS assessments within the CMP, then no technical analysis will be required. However, if a CMP requires assessment of other modes or metrics, then the transportation assessment will need to address consistency with those modal requirements.

3.2 Caltrans

The California Department of Transportation (Caltrans) operates and maintains the State's highway system. Transportation impact studies prepared for CSU projects within a study area that includes Caltrans facilities should coordinate with Caltrans on the scope of the transportation assessment, including the standard practices of the local Caltrans District. Notwithstanding SB 743, Caltrans may require additional analysis beyond VMT, including, for example, queue analysis at Caltrans facility on- and off-ramps as related to potential safety impacts.

In recent years, Caltrans has begun moving toward a multi-modal, "complete streets" perspective in managing its facilities, to include not just freeways but many urban thoroughfares. Several guidance documents are available to support impact assessment on such routes, including Complete Streets Implementation Action Plan (February 2010) and Smart Mobility 2010 (February 2010).

In furtherance of the "complete streets" approach, in November 2016, Caltrans published interim guidance relative to SB 743. These guidelines supersede the previous Caltrans' guidance related to traffic impact analyses (published in 2002) that were largely focused on vehicle LOS. The guidance specifically states:

> *"Past LD-IGR practices primarily utilized Level of Service to identify various impacts to the State Highway System (SHS), and often limited its recommended mitigation to traditional road*

improvements. Although Caltrans recognized that Lead Agencies could implement other measures, such as improvements to other modes of transportation or incentive programs to encourage use of other modes, the Lead Agencies often rely on Caltrans' recommended measures. Going forward, efforts to fulfill our LD-IGR obligation should consider multimodal solutions to not only improve access to destinations for all system users (motorists, transit riders, bicyclists, pedestrians), but also encourage efficient land use that helps achieve the multitude of goals sought, including quality of life, economic prosperity, the development of multimodal networks, and GHG emissions reduction ."

3.3 Regional Transportation Planning Agencies

Regional transportation planning agencies (RTPA) are one of three regional agencies responsible for regional planning in California. The Caltrans Director designates the official regional transportation planning agency for each of California's 58 counties. For each county, the regional transportation planning agency is established through one of the following:

- created by statute,
- the metropolitan planning organization (MPO) serves as the regional transportation planning agency, or
- a local transportation commission or county transportation commission serves as the regional transportation planning agency.

Prior to the passage of SB 743, the purpose of the RTPA was to monitor LOS on regional roadways and prepare regional plans and programs to improve all modes of transportation locally and regionally. Under the new CEQA guidelines established pursuant to SB 743, RTPAs will have the responsibility of developing plans to reduce VMT. This change from vehicular LOS to regional VMT will align transportation metrics and mitigation measures with those required for air quality and covered in the Sustainable Communities Strategy (SCS). The SCS integrates land use and transportation strategies to achieve greenhouse gas (GHG) emission reduction targets. SB 375 requires each metropolitan planning organization to prepare a SCS.

In tandem with an SCS, agencies are likely to prepare a Regional Transportation Plan (RTP), which is a long-range planning document identifying future transportation improvements and the funding available within the region. The RTP/SCS collectively identifies improvements across the entire transportation system, including the roadway network and public transit systems.

Transportation impact studies prepared for CSU projects shall review the project's consistency with the RTP/SCS and document those consistency findings as outlined in prior chapters of this manual.

3.4 Air Quality Management Districts

Air Quality Management Districts (AQMDs) are comprised of locally elected officials from each jurisdiction within the district. The purpose of the districts is to regulate sources of air pollution. In September 2006, the State of California passed AB 32, the Global Warming Solutions Act of 2006, which requires the state to achieve a specified statewide GHG emissions reduction cap by 2020. Since the passage of AB 32, the California Air Resources Board and regional AQMDs have been developing guidance on the evaluation of GHG baselines and reduction strategies. Senate Bill 375 (SB 375) provides incentives in the form of CEQA streamlining to encourage community design that supports reduction in per capita GHG emissions. This effort has been further supported by the passage of SB 743.

CSU projects that require CEQA clearance may need to provide inputs, such as vehicle trips and vehicle-miles travelled, to the consultant preparing the air quality analysis of the project. Most AQMDs provide a set of guidelines to assist Lead Agencies in evaluating potential air quality impacts of projects and plans. Impact assessment for air quality assessment within a District's governing area should generally be prepared consistent with the guidelines set by the District.

3.5 Coastal Commission

The California Coastal Commission (CCC) is a state agency that partners with coastal cities and counties to regulate the use of land and water in the coastal zone under the California Coastal Act. The California Coastal Act includes provisions relating to transportation and public services in the context of new development. For example, Chapter 3, Article 6, Section 30250 (Location; Existing Developed Area), states that most new development must be located in proximity to existing developed areas in order to consolidate public services. Likewise, Section 30252 (Maintenance and Enhancement of Public Access) states that new development should maintain and improve public access to the coast, including measures such as extending transit service, mixing land uses in developed areas, providing bicycle and pedestrian circulation within the development, and providing adequate parking and/or increased transit service.

To maintain consistency with the Coastal Act, local governments prepare Local Coastal Programs (LCP) for CCC approval. The LCP guides development in the coastal zone and consists of a Land Use Plan, consistent with the local jurisdiction's general plan land uses, and an Implementation Plan, which is typically integrated with the local government's zoning code. Though the LCP plans vary by jurisdiction, a given LCP may directly address transportation considerations, such as the provision of new bicycle storage facilities at beach parking lots and standards for maximum roadway width through the coastal zone. Once the CCC adopts the LCP, the local agency that put forth the LCP is responsible for issuing coastal permits concurrent

with that planning document. The CCC only directly issues permits for land not covered under an LCP and addresses appeals of coastal permits.

CSU transportation impact studies for projects within the coastal zone shall review the goals and policies set by the applicable LCP and determine the project's consistency with those goals and policies. (Note: The term "coastal zone" is a legally defined term. Campuses should consult with the General Counsel's office to determine whether the subject project would be located within the coastal zone.)

3.6 Local Agencies

Local agencies in California typically have the ability to control land use and transportation within the City. However, CSU campuses are not subject to local land use control. As such, local agencies may approach a campus during a TIS without the understanding of their lack of control over campus land use decisions.

As such, local agencies may comment on environmental documents as they are a responsible (e.g. they are responsible for the areas around the campus). These local agencies are governed by the policies contained in their General Plan (which includes goals, policies, and maps related to transportation in its Circulation Element). Additionally, many cities have completed other transportation plans (such as Active Transportation Plans (ATPs), Bicycle Master Plans, Transit Master Plans, etc.) that guide the planning and implementation of those transportation facilities in their City.

Many cities have specific General Plan targets related to LOS. As such, local agencies may ask for intersection or roadway segment analysis to show the project's consistency with their policies. As noted above, LOS is no longer required for CEQA assessment and the CSU is not subject to these local land use control policies. Therefore, if a local agency does request LOS assessment (or any other assessment hat is not consistent with this manual), the Chancellor's office shall be consulted immediately to determine the most appropriate approach to coordinating with the local agency.

Appendix A – Glossary of Acronyms

SB – Senate Bill

AB – Assembly Bill

LOS – Level of Service for intersection or roadway operations

VMT – Vehicle Miles of Travel

TISM – CSU Traffic Impact Study Manual

CEQA – California Environmental Quality Act

OPR – California Office of Planning and Research

MP – Master Plan

RTP – Regional Transportation Plan

SCS – Sustainable Communities Strategy

TPA – Transit Priority Area

FTE – Full Time Equivalent

TDM – Transportation Demand Management

Appendix B – RTP Assumptions

Model Inputs and VMT Estimates for Campuses

Note: This information is meant simply as a reference for the CSU campuses. For project applications, campuses need to verify with the Metropolitan Planning Organizations and other entities that manage the below models that the information associated with them is correct before they use it.

Campus	Potential Travel Demand Forecasting Models to Estimate VMT	Base Year	Base Year - Employment	Base Year - Students	Future Year	Future Year - Employment	Future Year - Students	Other Dedicated VMT Estimators Available	Information on Existing Campus VMT Estimates	Link to Reports with VMT Estimates	Notes
Northern											
Cal Maritime	• Solano/Napa Activity Based Model (Solano/Napa) • The Bay Area's Metropolitan Transportation Commission's Travel Model One (TMO) Activity Based Model	• **Solano/Napa:** 2015 • **TMO:** 2010	• **Solano/Napa:** 329 • **TMO:** 645	• **Solano/Napa:** 291 • **TMO:** 573	• **Solano/Napa:** 2040 • **TMO:** 2040	• **Solano/Napa:** 414 • **TMO:** 727	• **Solano/Napa:** 364 • **TMO:** 640	N/A	• The "Increase in VMT After Implementation of the Master Plan" was calculated on page 334 of the report "California State University Maritime Academy Physical Master Plan Environmental Impact Report" but the total VMT of the campus was not calculated. • The increase in VMT was not broken down by user type. • Not enough information was provided to know whether this increase was calculated based on full or half accounting, or whether it was calculated in accordance with SB 743 guidelines.	California State University Maritime Academy Physical Master Plan Environmental Impact Report: https://www.dropbox.com/s/peqxbtupcfr798u/Cal%20Maritime%20Academy%20Project%20Public%20Review%20Draft%20EIR.pdf?dl=0	There are no trip-based travel demand forecasting models (TDMs) for this area.
Chico	Butte County Association of Governments (BCAG) Model	2014	N/A (see "Notes" column)	16,500	2036	N/A (see "Notes" column)	23,504	N/A	N/A	N/A	• The City of Chico has its own VISUM TDM. If you'd like information from that model, contact the City. Although note that the City uses the BCAG model instead of its own TDM. • There is no land use category represented in the BCAG model.
East Bay	• **For the Concord campus:** Contra Costa Transportation Authority (CCTA) 4 Step Model • **For the Hayward campus:** Trip-based Alalmeda County Transportation Commission (ACTC) Travel Demand Model	2010 for both models	• **CCTA:** 107 • **ACTC:** 1,774	• **CCTA:** 900 • **ACTC:** 13,061	2040 for both models	• **CCTA:** 210 • **ACTC:** 2,161	• **CCTA**: 0 • **ACTC:** 13,061	This online tool called "Simulated VMT per Capita by Place of Residence": https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=5dac76d69b3d41e583882e146491568b	N/A	N/A	
Humboldt	Humboldt County Travel Demand Forecasting model	See "Notes" column	See "Notes" column	See "Notes" column	See "Notes" column	See "Notes" column	See "Notes" column	See "Notes" column	N/A	N/A	We reached out to Caltrans about information on this TDM multiple times and did not hear back.
Sacramento	• Sacramento Metropolitan Travel Demand Model (SACMET) • Sacramento Activity-Based Travel Simulation Model (SACSIM)	• **SACMET:** 2012 • **SACSIM:** 2012	• **SACMET:** 3,388 • **SACSIM:** 3,239	• **SACMET:** 28,016 • **SACSIM:** 28,016	• **SACMET:** 2036 • **SACSIM:** 2036	• **SACMET:** 4,262 • **SACSIM:** 3,890	• **SACMET:** 36,419 • **SACSIM:** 36,419	N/A	• Reductions in VMT from commuter student trips between campus, and other trips (e.g. shopping trips) if the Campus Master Plan was implemented were estimated on pages 68 and 73, for Existing Plus Project and Future Plus Project conditions, respectively, but total VMT of the campus was not estimated. • Reductions in VMT for other user types, like faculty or staff, weren't estimated. • Not enough information was provided to know whether full or half accounting was used, or if VMT was estimated in accordance with SB 743 guidelines	CSU Sacramento Master Plan: http://www.csus.edu/aba/facilities/documents/csu%20sacramento%20master%20plan%20final%20eir%20_%20web.pdf	
San Francisco	• SF-Champ, San Francisco's TDM • The Bay Area's Metropolitan Transportation Commission's Travel Model One (TMO) Activity Based Model	• **SF-Champ:** 2012 • **TMO:** 2015	• **SF-Champ:** 881 • **TMO:** 9,410	• **SF-Champ:** 18,651 • **TMO:** 24,550	2040 for both models	• **SF-Champ:** 1,545 • **TMO:** 11,656	• **SF-Champ:** 18,651 • **TMO:** 31,298	N/A	• Total Miles Traveled per day by users of the SF State Shuttle Bus, people who drive alone, people who carpool, people who use the Muni Diesel Vehicles, and people who use the Muni Electric Vehicles were calculated on page 15 of the campus' Climate Action Plan. • Not enough information provided to know whether full or half accounting was used, or if SB 743 guidelines were followed.	San Francisco State University Climate Action Plan: https://sustain.sfsu.edu/sites/default/files/assets/doc/SFState_CAP.pdf	
San José	• Valley Transportation Authority (VTA) TDM • City of San Jose (San Jose) TDM	• **VTA:** 2013 • **San Jose:** 2008	• **VTA:** 2,869 • **San Jose:** 3,712	• **VTA:** 34,100 • **San Jose:** 34,100	• **VTA:** 2040 • **San Jose:** 2030	• **VTA:** 3,164 • **San Jose:** ?	• **VTA:** 34,100 • **San Jose:** ?	A sketch-level VMT tool that the City of San Jose developed here, although this tool is more appropriate for land development projects than campuses: http://www.sanjoseca.gov/vmt	N/A	N/A	We do not have access to Future Year Employment and College Population inputs for the City of San José's TDM.

Campus	Potential Travel Demand Forecasting Models to Estimate VMT	Base Year	Base Year - Employment	Base Year - Students	Future Year	Future Year - Employment	Future Year - Students	Other Dedicated VMT Estimators Available	Information on Existing Campus VMT Estimates	Link to Reports with VMT Estimates	Notes
Sonoma	Sonoma County Transportation Authority (SCTA) 4 Step Model	2005	6,404	8,384	2030	471,404	24,498	N/A	N/A	N/A	
Central											
Bakersfield	Kern Council of Governments (Kern COG) TDM	2017	1,392	9,368	2042	1,589	14,751	The Mixed Use Developed (MXD) Trip Generation and Travel Demand Management (TDM) post-processor for project-level VMT tool.	• VMT was estimated for the University Place Office Park Project, on page 86 of the report "CSUB University Place Office Park Project - Draft Initial Study-Mitigated Negative", but total VMT for the campus was not estimated. • The CalEEMod tool was used to estimate VMT. • VMT was not broken down by user type. • Not enough information was provided to know whether full or half accounting was used to estimate VMT, or if VMT was estimated based on SB 743 guidelines.	CSUB University Place Office Park Project Draft Initial Study: http://www.csub.edu/discover/_files/CSUB_Office_Draft_IS-MND.pdf	The post-processor VMT tool is not meant for universities, it's just a general tool.
Fresno	Fresno Council of Governments (Fresno COG) Model	2014	12,661	16,256	Both 2035 and 2042 are Future Years	• **2035:** 14,190 • **2042:** 13,904	• **2035:** 19,259 • **2042:** 20,013	Envision Tomorrow: https://frego.com/envision-tomorrow/	N/A	N/A	
Monterey Bay	Association of Monterey Bay Area Governments (AMBAG) TDM	2010	485	4,596	2035	454	5,170	N/A	Total campus VMT was not estimated, however the potential of the Promontory Project to decrease VMT was discussed on page 69 of The Promontory at California State University Monterey Bay (CSUMB) Specific Plan. Exactly how much VMT would decrease from the project was not discussed. The report just says that since the project is an infill development, VMT should decrease.	Initial Study for The Promontory at California State University Monterey Bay Specific Plan: https://csumb.edu/sites/default/files/images/st-block-88-1471897379448-raw-rbfthepromontoryatcsumbinitialstudymitigatednegativedeclaration.pdf	
San Luis Obispo	San Luis Obispo Council of Governments (SLOCOG) TDM	**SLOCOG:** 2010	**SLOCOG:** 2,843	**SLOCOG:** 19,325	**SLOCOG:** 2020	**SLOCOG:** 2,945	**SLOCOG:** 24,000	N/A	• VMT was estimated on page 273 of the Draft Environmental Impact Report for CSU San Luis Obispo's 2035 Master Plan • VMT was broken down by the following user types: Faculty/Staff and Off-Campus Students • Full accounting was used to estimate VMT, which is consistent with SB 743 guidelines	Draft Environmental Impact Report for CSU San Luis Obispo's 2035 Master Plan: http://masterplan.calpoly.edu/wp-content/uploads/2017/11/01_Cal-Poly-Master-Plan-2035-Draft-EIR_November-2017.pdf	The City of San Luis Obispo has its own TDM, however Fehr & Peers does not have access to recent copies of it. If you'd like to use that model, please contact the City.
Stanislaus	Stanislaus Council of Governments (StanCOG) TDM	2008	96	8,601	Not Available	Not Available	Not Available	N/A	N/A	N/A	We do not have access to Future Year inputs for the StanCOG TDM.
Southern											
Channel Islands	Ventura County Transportation Commission (VCTC) TDM	2012	835	4,617	2040	835	4,824	N/A	•Annual VMT from the East Campus Residential Neighborhood Project was estimated on page 254 of the report "CSUCI Specific Reuse Plan Amendment Draft Environmental Impact Report" but total VMT for the campus was not estimated. • Annual VMT from the project was estimated for passenger cars, light/medium trucks, heavy trucks/other, and motorcycles. • Not enough information was provided to determine whether full or half accounting was used, or if VMT was estimated based on SB 743 guidelines.	CSUCI Specific Reuse Plan Amendment Draft Environmental Impact Report: https://www.csuci.edu/ci-2025/documents/specific-reuse-plane-phase-2-draft-eir.pdf	
Dominguez Hills	Southern California Association of Governments (SCAG) TDM	2012	2,061	12,933	2040	2,568	13,017	N/A	N/A	N/A	
Fullerton	• Orange County Transportation Authority Model (OCTAM) TDM • SCAG TDM	2012 for both models	• **OCTAM:** 1,526 • **SCAG:** 6,242	• **OCTAM:** 31,635 • **SCAG:** 31,847	2040 for both models	• **OCTAM:** 2,266 • **SCAG:** 9,088	• **OCTAM:** 34,747 • **SCAG:** 32,210	N/A	N/A	N/A	
Long Beach	SCAG TDM	2012	7,128	38,131	2040	7,854	38,379	N/A	N/A	N/A	
Los Angeles	• City of Los Angeles' (LA) TDM • SCAG TDM	2012 for both models	• **LA:** 2,335 • **SCAG:** 508	• **LA:** 26,472 • **SCAG:** 26,472	2040 for both models	• **LA:** 3,244 • **SCAG:** 1,284	• **LA:** 26,644 • **SCAG:** 26,644	N/A	• Total campus VMT was not estimated, but an estimated decrease in VMT by commuter students due to the North Campus Project was discussed on page 52 of The North Campus Project Environmental Impact Report. • Decreases in VMT for other user types, like faculty, were not discussed. • Full accounting was used, which is consistent with SB 743 guidelines.	Final EIR for the North Campus Project: http://www.calstatela.edu/sites/default/files/groups/FPDC/preliminary_csula_north_campus_eir.pdf	

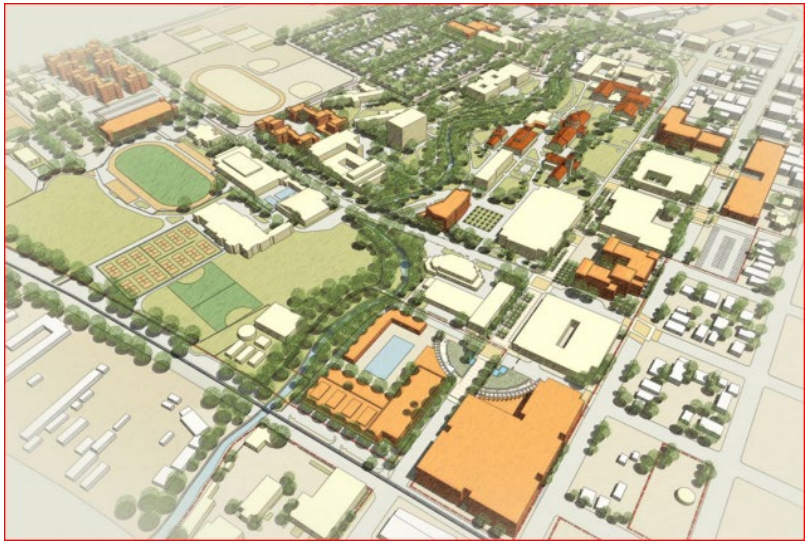
Campus	Potential Travel Demand Forecasting Models to Estimate VMT	Base Year	Base Year - Employment	Base Year - Students	Future Year	Future Year - Employment	Future Year - Students	Other Dedicated VMT Estimators Available	Information on Existing Campus VMT Estimates	Link to Reports with VMT Estimates	Notes
Northridge	• City of Los Angeles' (LA) TDM • SCAG TDM	2012 for both models	• **LA:** 11,826 • **SCAG:** 6,321	• **LA:** 36,438 • **SCAG:** 36,438	2040 for both models	• **LA:** 12,540 • **SCAG:** 6,507	• **LA:** 36,674 • **SCAG:** 36,674	N/A	Total campus VMT has not been estimated, but it was predicted that the Tseng College of Extended Learning Building Project would not significantly increase VMT, on page 17 of the CSUN 2005 Master Plan Update Final EIR Addendum.	This report is not available online. For more information on the CSUN 2005 Master Plan Update Final EIR, see: http://www.csun.edu/pubrels/envision2035/documents.html	
Pomona	• SCAG TDM • Pomona Traffic Analysis Model (PTAM)	• **SCAG:** 2012 • **PTAM:** 2008	• **SCAG:** 3,842 • **PTAM:** 224	• **SCAG:** 28,907 • **PTAM:** 27,737	• **SCAG:** 2040 • **PTAM:** 2035	• **SCAG:** 4,746 • **PTAM:** 241	• **SCAG:** 29,095 • **PTAM:** 29,737	N/A	• Estimated VMT reductions from commuter students by replacing student housing are included on page 43 of the Final Environmental Impact Report (EIR) for Student Housing Replacement, but total campus VMT was not estimated. VMT reductions were not calculated for other users, such as faculty. • Full accounting was used to estimate the VMT reductions, which is consistent with SB 743 guidelines. • Reducing VMT by Faculty and Staff by 10% is a goal of the Climate Action Plan (CAP), as stated on page 18, but the CAP doesn't include VMT estimates.	• Final EIR for Student Housing Replacement: https://www.cpp.edu/~fpm/planning-design-construction/docs/student-housing-replacement-final-eir-08-2016.pdf • CAP: https://www.cpp.edu/~sustainability/pdf/CPP_CAP_091109.pdf	
San Bernardino	• For main campus: San Bernardino Traffic Analysis Model (SBTAM) • For Palm Desert campus: Riverside County Traffic Analysis Model (RIVTAM)	• **SBTAM:** 2012 • **RIVTAM:** 2008	• **SBTAM:** 0 • **RIVTAM:** 826	• **SBTAM:** 17,800 • **RIVTAM:** 0	• **SBTAM:** 2040 • **RIVTAM:** 2035	• **SBTAM:** 612 • **RIVTAM:** 2,016	• **SBTAM:** 25,100 • **RIVTAM:** 0	N/A	• On page 93 of the Final EIR for CSU San Bernardino's 2016 Campus Master Plan, VMT was estimated for the main campus for existing and master plan enrollment. Under each condition, VMT was broken down by the following user types: on-campus students, off-campus students, and faculty/staff. For Master Plan enrollment, an additional user type was analyzed: "Discovery Park Employees". • Full accounting was used to estimate VMT, which is consistent with SB 743. • VMT was also estimated in the Final EIR for the 2016 Campus Master Plan for CSU San Bernardino's Palm Desert Campus, on page 96. • VMT was estimated for existing and master plan enrollment. Under each condition, VMT was broken down by: off-campus students and faculty/staff. For Master Plan Enrollment, there was an additional user type: on-campus students. • Full accounting was used to estimate VMT for the Palm Desert Campus, which is consistent with SB 743	• Master Plan for CSUSB: https://www.csusb.edu/sites/csusb/files/08-28-17%20CSUSB%20Final%20EIR_appendices%20%28WEB%29.pdf • Master Plan for CSUSB, Palm Desert: https://www.csusb.edu/sites/csusb/files/12-19-2017%20CSUSB%20PDC%20Final%20EIR%202016%20Campus%20Master%20Plan.pdf	
San Diego	San Diego Association of Governments (SANDAG) TDM	2012	11,979	10,892	2050	39,157	15,961	N/A	• On page 10 of the report "Pathways Toward Zero-Carbon Campus Commuting: Innovative in Measuring, Understanding, and Reducing Greenhouse Gas Emissions", Annual Total Miles for 2016-2017 for students, faculty, and staff were calculated, but the report doesn't say how this number was calculated or whether the methodology is consistent with SB 743. • Page 40 of the GHG emissions section of the EIR for a new student housing project says that the project would result in 3,793 VMT per day, but there are no details on how that number was calculated	• Pathways Toward Zero-Carbon Campus Commuting: https://trid.trb.org/view/1496845 • GHG Emissions section of the EIR: http://advancement.sdsu.edu/PDFs/FEIR/Revised_DEIR/4_7_Greenhouse_Gas_Emissions.pdf	
San Marcos	SanDAG TDM	2012	2,536	7,405	2050	12,260	10,854	N/A	N/A	N/A	

Appendix C – Test Case: CSUSB Master Plan

SB 743 Implementation

Step 2 – Master Plan or Non-Screened Out Project Generated VMT Assessment

- Key considerations:
  - To ensure the ability to maintain consistency between efficiency metrics, recommend use of the local or regional travel demand model.
  - Can compare campus VMT/person (or other efficiency metric) to citywide or regional totals



Test Case – CSUSB MP

Project Generated VMT Assessment

- Draft Threshold: CSU projects should estimate VMT per person and strive to be 15% less than the citywide, subregional, or regional average – **Master Plan generated VMT**
- Consistent with the State guidelines/recommendations

Test Case – CSUSB MP

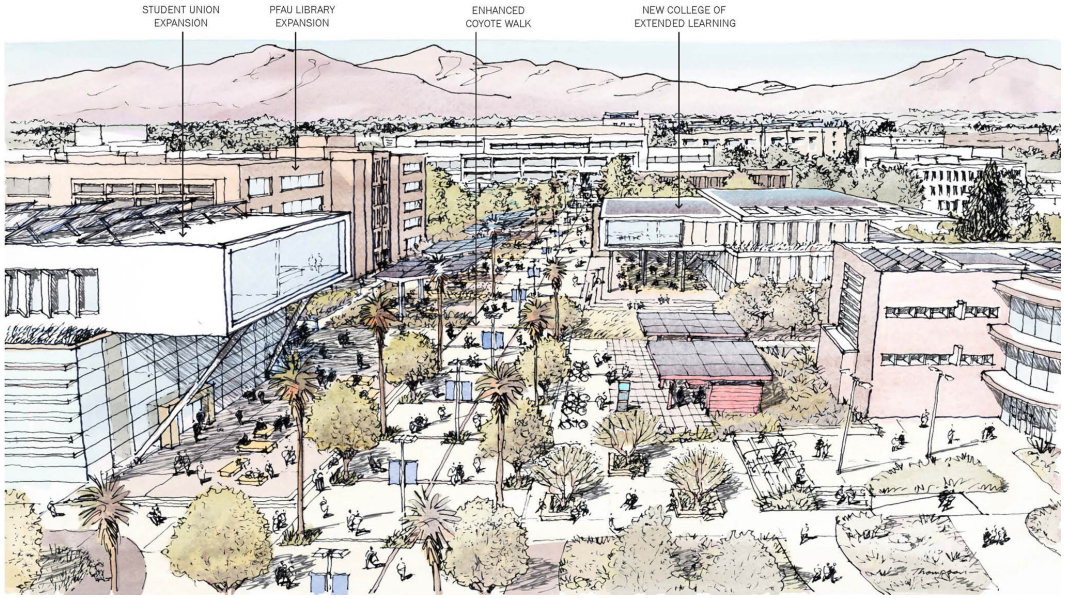
Master Plan Generated VMT Assessment

Table 2: Project Impact Assessment		
VMT Per Service Population (Includes Students as Noted Above)	**Existing VMT**	**15% Below Existing Threshold (Project Impact)**
Project Generated VMT	***16.0***	
Citywide (City of San Bernardino) VMT	22.4	***19.0***
Regional VMT	23.6	***20.1***
Does Project Exceed Applicable Project Threshold?		***No***

SB 743 Implementation

Step 3 – Effect on VMT (Cumulative Assessment)

- Is the Master Plan/project better than or worse than RTP assumptions (e.g. is VMT per person higher compared to the RTP)



Test Case – CSUSB MP

Effect on Regional or City VMT (Cumulative Assessment)

- Draft Threshold: CSU projects should result in VMT per person that is the same as or lower than the citywide, subregional, or regional average – **Effect on VMT (Cumulative Assessment)**
    - Is regional or citywide VMT increasing with the project?
- Consistent with the State guidelines/ recommendations

Test Case – CSUSB MP

Effect on Regional or City VMT (Cumulative Assessment)

Table 3: Cumulative Impact Assessment			
VMT Per Service Population (Includes Students as Noted Above)	**2040 RTP/SCS**	**2040 With Project**	**Difference**
City of San Bernardino	25.5	25.3	-0.2
Valley Region of San Bernardino	28.0	27.9	-0.1
Does Project Exceed Cumulative Threshold?			**No**

Test Case – CSUSB MP

Step 4 - Impacts and Mitigation

- No Significant Impacts As:
  - Master Plan Generated VMT was less than 15% of the Citywide and Regional averages
  - Effect on VMT (Cumulative) was less than the Citywide or sub-regional average
- Mitigation:
  - No impacts, so no mitigation required
  - If mitigation is required for a significant impact, consider land use changes such as more on-campus housing, land use location change, and/or transportation demand management (TDM)
  - Roadway improvements are no longer required to mitigate significant impacts
  - Campus's can invest in TDM instead of roadway improvements; supports CAP Goals and Active Transportation