County of San Diego

Transportation Study Guidelines

Adopted – September 2022

APPROVAL

I hereby certify that the **County of San Diego Transportation Study Guidelines,** which were adopted by the County Board of Supervisors on September 28th 2022, and are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and TechnicalReport Format and Content Requirements and were considered by the Director of Planning & Development Services, In coordination with the Director of Public Works on the 28th day of September, 2022.

DAHVIA LYNCH
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 28th day of September, 2022. TheDirector of Planning & Development Services is authorized to approve revisions to these County of San Diego Transportation Study Guidelines, which includes periodic updates to the SANDAG Regional Model and Infill Screening Maps. Any revisions to the CEQA VMT thresholds of significance contained in Section 3 *CEQA Requirements for Transportation VMT* must be approved by the County of San Diego Board of Supervisors.

Approved: September 28, 2022

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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.

Infill - Infill development is defined by OPR as "…building within unused and underutilized lands within existing development patterns, typically but not exclusively within urban areas." Multiple land use and transportation network variables were identified to create a quantitative definition for "infill development" in the County, including household density, intersection density, and job accessibility. These metrics and corresponding maps are further explained in Appendix D.

Transit Opportunity Areas (TOA) - TOAs are identified areas in which the regional transit network has the best opportunity to be expanded within the unincorporated county and are near ore adjacent to SANDAG identified "Mobility Hubs."

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.

Sustainable Community Strategy – A Sustainable Community Strategy (SCS) is a document produced by all California metropolitan planning organizations required by Senate Bill 375. The SCS must provide planning information to demonstrate that transportation, housing, and land use decisions align with the California Air Resources Boards (CARB) GHG emissions reduction targets. SANDAG is our region's metropolitan planning organization.

SANDAG Regional Plan - The Regional Plan provides a long-term blueprint for the San Diego region that seeks to meet regulatory requirements, address traffic congestion, and create equal access to jobs, education, healthcare, and other community resources. The SANDAG Regional Plan includes the region's SCS.

Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) – The RTP/SCS is produced by SANDAG and complies with federal requirements for the development of regional transportation plans, retains air quality conformity approval from the U.S. Department of Transportation, and preserves funding for the region's transportation investments. .

Transportation Analysis Zone (TAZ) – TAZs are units of geography used in the Travel Demand Model andcontain 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 (VMT) - The number of miles traveled by motor vehicles on roadways in a given areaover 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 andperformance 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 basisfor 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 activetransportation infrastructure (bike lanes, sidewalks, etc.) generate more driving than development nearcomplementary 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) to replace the previously adopted *"Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic"*

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 I**.

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 VMT.

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 reducingVMT 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 and county staff 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, consultants, and county staff 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 Local Mobility Analysis (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 resultof 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 transportationnetwork 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 Review 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 theCounty'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 County-initiated and land developmentprojects.
- 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 toserve 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 transportationeffects 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

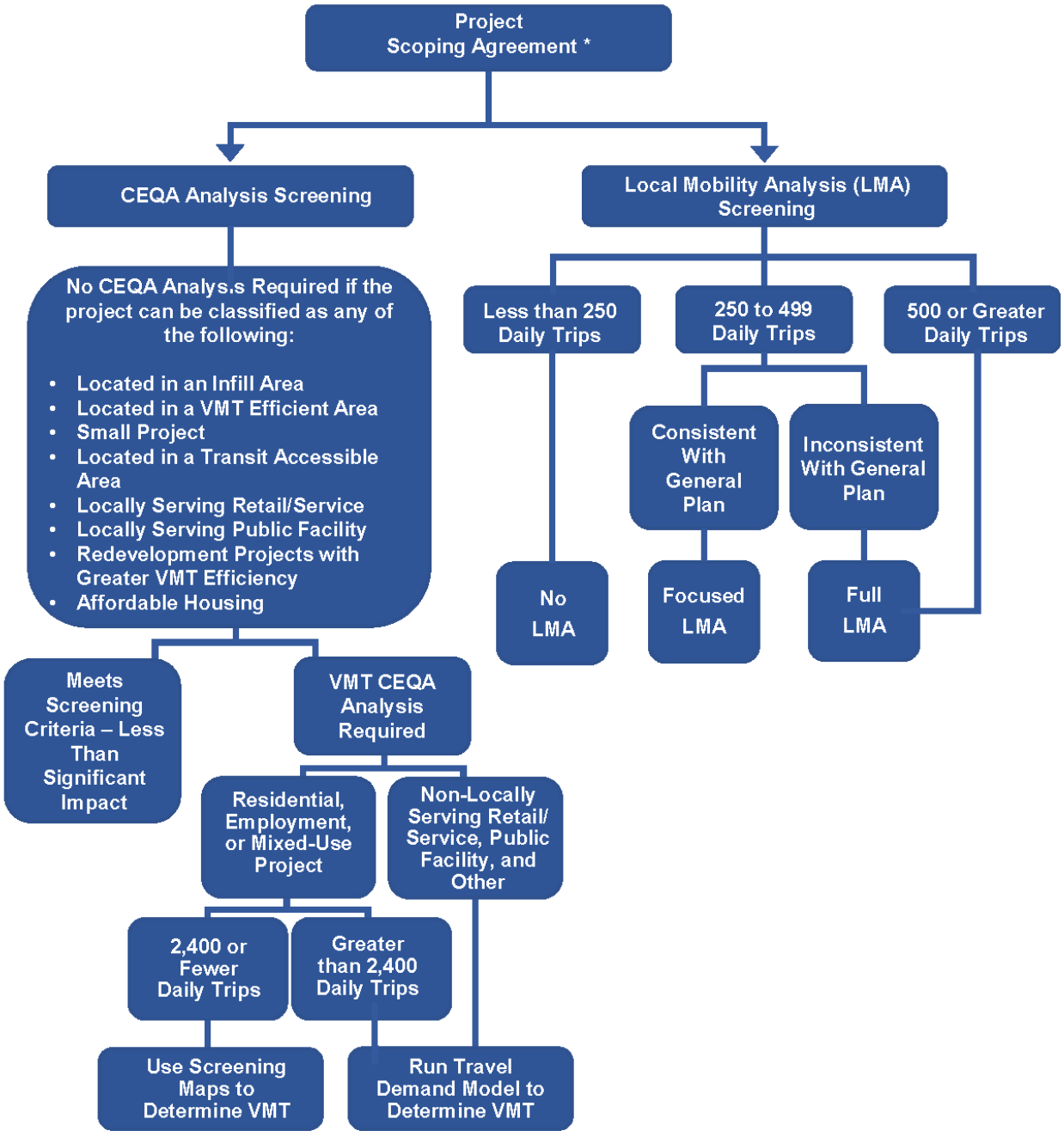
Transportation Studies must be prepared under the supervision of a registered Traffic Engineer who has specific training and experience in preparing transportation studies. All transportation studies must be stamped by a California Registered Traffic Engineer or equivalent as approved by County Planning & 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 ofSan 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 clarifythe 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 ensureproductive 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 improvementswill 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 recentguidance 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 theTransportation Study requirements according to the 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 LMAmay 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 analysisand 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 and County-initiated projects may need to complete a Transportation Study as identified in Tables 1 and 2. Aproject'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. Projects Located in VMT Efficient Areas Based on Regional Average
• Region being defined by OPR as the MPO/RTPA geographical Boundary • Use location-based screening maps (consistent with project land uses)
2. Projects Located in Infill Village Areas
• Use location-based screening maps • VMT Screening Criteria for Infill Areas, (see Appendix D)
3. Small Residential and Employment Projects
• Projects that generate less than 110 average daily trips (trips are based on the number of vehicle trips after any alternative modes/location-based adjustments applied)
4. Locally Serving Retail Projects
• Projects that are 50,000 square feet or less
5. 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, emergency shelters, and passive public uses.
6. 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.
7. 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 anyinternal 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 suchprojects to confirm that the project does not have an effect on the safety and operations of thetransportation 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 GeneralPlan 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 asensure the local transportation system is adequate to serve the project and is consistent withCounty 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 withthe 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.

- The (not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region. This guide provides average trip generation rates for a variety of land-use categories based on data collected solely within the San Diego region.

- For unique land uses, trip generation should be derived from locally observed data that includestrip 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 bysurveying 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'sthat 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 thetrip distribution for projects that generate 1,000 or greater daily trips.

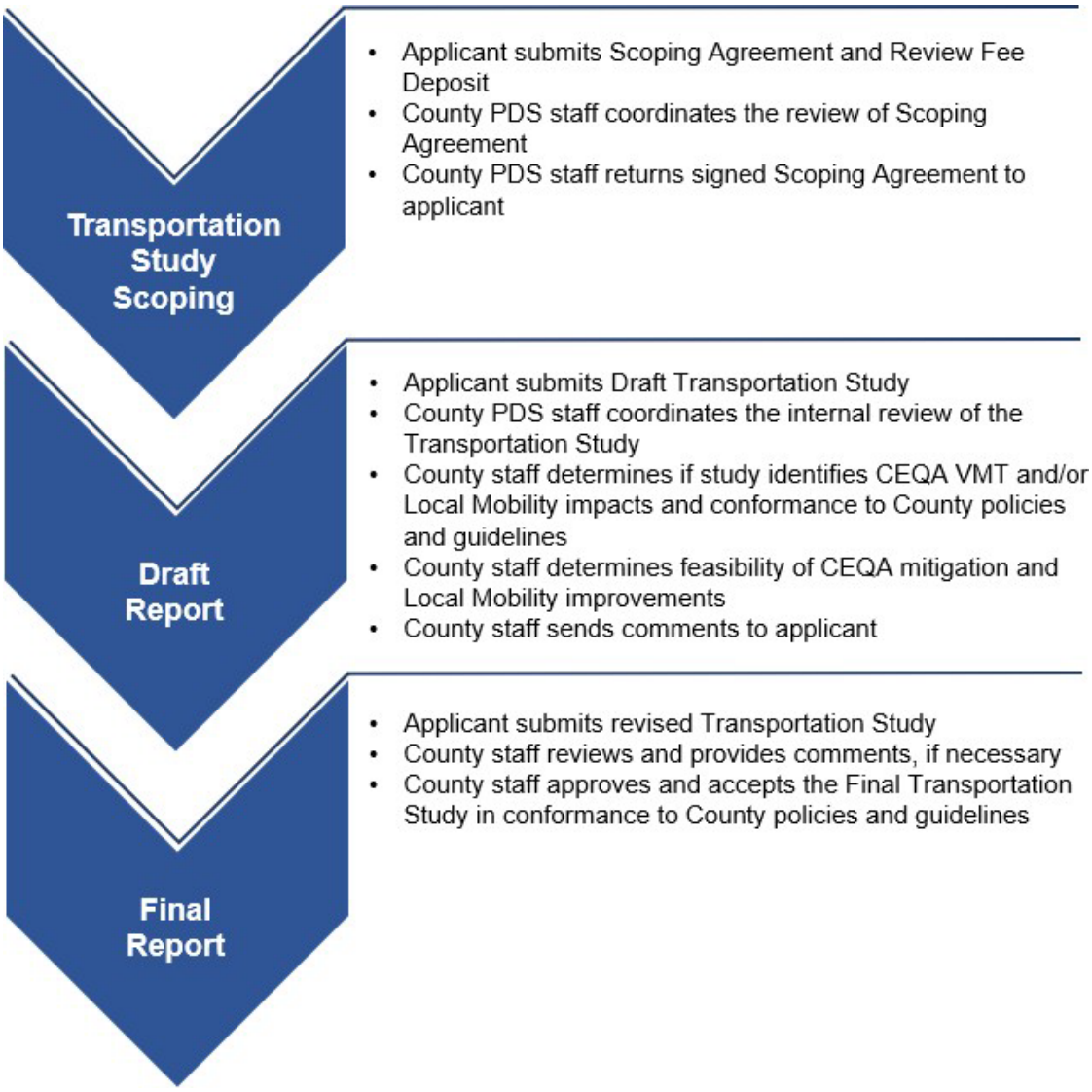
Additional information on trip generation, including trip reductions are discussed further in Chapter 4.

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 andproviding 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 toevaluate 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 includesthe 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 EnvironmentalQuality Act."
2. "More appropriately balance the needs of congestion management with statewide goals relatedto 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 resultof 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 ofCEQA significance.
- Reduce the need to widen or build roads through effective use of the existing transportationnetwork 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 proxyfor 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 pollutionemissions, GHGs, and energy consumption.

3.2. Metrics and Methodology for Calculating VMT

Typically, transportation VMT analysis for CEQA should be conducted using the SANDAG Regional Travel Demand Model; however, other tools for conducting VMT analysis may be preferred depending on the project characteristics and the sensitivity of the SANDAG model in the project location and for the project type.

The SANDAG model is updated every 3-4 years to reflect existing conditions, the cost of driving, observed travel patterns, and policy changes. In addition, the updates utilize the latest in software versions and state-of-the practice for modeling. Typically, the model is updated at the same time SANDAG updates the regional transportation plan; however, minor updates occasionally occur outside of the 3-4 year major update. The current version of the SANDAG model is called Activity Based Model (ABM) 2+. This model became the current model in December 2021 at the time the SANDAG Board adopted the Regional Plan.

The SANDAG model provides VMT per Resident and VMT per Employee data for the areas within the SANDAG region (the San Diego County boundary). As is true for all travel demand models, the SANDAG model has limitations in including VMT from outside of the County boundary. The SANDAG model output for VMT per Resident and VMT per Employee does not include any VMT generated by residents or employees outside of the SANDAG region. Furthermore, it does not include any VMT for people who work within San Diego County but live outside of the region (for example, some living in Temecula who works in Escondido is not accounted for). The County's VMT maps adjust for the external VMT using the California Statewide Travel Model. Note that the maps do not adjust for VMT in Mexico because the data is not available. Additional information about adjusting the metrics for external VMT is provided below.

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 triptours made by residents: home-based and non-home-based trip tours (i.e., all VMT for a resident for theentire day regardless of trip purpose or origin/destination).

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

SANDAG has a procedure to produce VMT per Resident; however, the SANDAG procedure to producethis 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 work related total daily VMT generated by resident employees[1] ofa geographic area and dividing by the number of employees of that geographic area. Total daily VMT includes all work tours made by employees (this includes an employee's commute and any other work-related travel such as going to lunch or to a meeting). To analyze the VMT per Employee for a proposed project,the total work tour 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 notaccounted for in the SANDAG output. A procedure is applied to the SANDAG data to account for work related VMT that occurs outside of the region both for resident employees and for employees who live outside of the region. The County's VMT maps include this adjustment for external VMT.

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 retail/service projects that are not considered *locally serving*. To analyze the VMT per Service Population for a proposed project, the project's total VMT is divided bythe project population plus employment.

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

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-DMethod 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 generatedeither 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 triplengths 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 StatewideModel TAZs.
- Add “Gate” attribute to CSTDM roadway network links and set “Gate” equal to “gateway id” onlyfor 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 betweeneach 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 boundaryfor 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 oneof the screening criteria below would have a less than significant VMT impact due to project characteristics and/or location.

On the County's website is a SB 743 Interactive Mapping Tool based on VMT Efficient Areas based on a Regional Geography and on defined Infill areas. Projects can use this tool to determine if their project would have a *less than significant* impact for VMT.
https://www.sandiegocounty.gov/content/sdc/pds/SB743.html

1. *Projects Located in a VMT Efficient Area*

Following guidance provided by OPR, 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 entire San Diego County region, including the incorporated cities. 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 theentire San Diego County region, including the incorporated cities.

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 entire San Diego County region, including the incorporated cities.

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 Resident **and** Employee that is 15 percent below the baseline average for the entire San Diego County region, including the incorporated cities.

Based on OPR Technical Advisory guidance, 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. Instead, OPR recommends analyzing each use separately, or simply focusing analysis on the dominant use, and comparing each result to the appropriate threshold.

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 isany area with an average VMT per Service Population 15 percent below the baseline average for the entire

San Diego County region, including the incorporated cities.

2. Projects located in Infill Village Area

Infill development has been studied for decades by researchers, and each research study and paper has provided varying definitions for infill development. Infill development is defined by OPR as "…building within unused and underutilized lands within existing development patterns, typically but not exclusively within urban areas." A definition for infill is also codified in California's Public Resources Code Section 21061.3 and includes criteria involving adjacent urban development, recent development approvals, and history of development on the site.

Based on definitions and information provided by both the US Census and Department of Transportation, the following criteria was prepared to define and map infill in the unincorporated area:

1. **Household density.** Household density above 385 housing units per square mile was selected based on the US Census definition for urban area, replacing the previous use of population to account for smaller household sizes and seasonal populations. The 385 housing units per square mile is used by the Census Bureau to identify urban areas across the country based on the concentration of housing.
2. **Intersection density.** An urban area is defined by having over 128 intersections per square mile.
3. **Jobs Accessibility.** Jobs accessibility is determined by the number of employment opportunities within a 15-mile radius of a location, which is the average driving distance to work based on information from the US Department of Transportation.

Using the above criteria creates a geographic area that is associated with urban development within the unincorporated area of the county. Development in more dense areas with high job accessibility leads to more diversity in land use, demand for transit (bus and trolley) and multimodal infrastructure (walking and biking), and shorter vehicle trips, which reduce greenhouse gasses and VMT.

An Infill development is defined by OPR as "…building within unused and underutilized lands within existing development patterns, typically but not exclusively within urban areas." Multiple land use and transportation network variables were identified to create a quantitative definition for "infill development" in the County, including household density, intersection density, and job accessibility.

The county's General Plan identifies villages as areas where a higher intensity and a wide range of land uses are established or have been planned. Typically, Village areas function as the center of community planning areas and contain the highest population and development densities. Village areas are typically served by both water and wastewater systems. Ideally, a Village would reflect a development pattern that is characterized as compact, higher density development that is located within walking distance of commercial services, employment centers, civic uses, and transit (when feasible).

TOA's are identified areas in which the regional transit network has the best opportunity to be expanded within the unincorporated county and are near ore adjacent to SANDAG identified "Mobility Hubs." The Board directed staff to conduct a Programmatic Environmental Impact Report (EIR) for TOAs as part of "Phase 2.

These definitions, metrics and corresponding maps are further explained in Appendix D.

3. Small Residential and Employment Projects

Following guidance provided by OPR, projects generating less than 110 daily vehicle trips (trips are based

on the number of vehicle trips calculated using appropriate trip generation rates with any alternative modes/location-based adjustments are applied) may be presumed to have a less than significant impact absent substantialevidence to the contrary[2].

4. Projects Located in a Transit Accessible Area

Following guidance provided by OPR, 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 thanrequired 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-incomeresidential units.

5. Locally Serving Retail/Service Projects

Following guidance provided by OPR, locally serving retail/service projects less than 50,000 square feet may be presumed to have a less thansignificant 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.

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[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).

6. Locally Serving Public Facilities and Other Uses

Following guidance provided by OPR, 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 donot 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
- Open space preserves, Local parks and trailheads
- Government offices
- Communication and utility buildings
- Water sanitation buildings
- Waste management buildings

7. Redevelopment Projects with Greater VMT Efficiency

Following guidance provided by OPR, 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, absentsubstantial evidence to the contrary.

8. Affordable Housing

Following guidance provided by OPR, an affordable housing project may be presumed to have a less than significant impact absentsubstantial evidence to the contrary if 100 percent of units are affordable.

Affordable housing developments produce fewer vehicle trips than equivalent market-rate developments. The 11th Edition of the ITE Trip Generation Manual provides trip generation rates for affordable housing units in addition to trip generation rates for market-rate units.

3.3.2. VMT Thresholds of Significance

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

- **Residential**: 15 percent below the County Regional average VMT per Resident. This includes the entire San Diego County region, including the incorporated cities.
- **Employment (Office/Commercial/Industrial)**: 15 percent below the County Regional average VMT per Employee, including the incorporated cities.
- **Retail/Service**: A net increase in total area VMT or 15 percent below the County Regional average VMT per Service Population, including the incorporated cities.
- **Mixed-Use**: 15 percent below the County Regional average VMT per Resident **and** Employee based on land use type (i.e., residential, office/commercial, and retail).
- **Regional Recreational**: A net increase in total regional VMT.
- **Regional Public Facilities**: A net increase in total regional VMT.
- **Infill:** Projects that meet the quantitative definition for "infill development" in the County, including household density, intersection density, and job accessibility and are within Transit Opportunity Areas (TOAs).
- **Other Project Types**: **Appendix E** 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 landuse 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 comparethe resulting build-out year VMT per Resident to the existing regional average. The threshold is15 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. Thethreshold 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. Thethreshold 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 conduct a VMT analysis, guidance is provided below on how to conduct transportation VMT analysis given the project type and number of driveway trips. Projects that generate less than 2,400 driveway trips can assume the VMT of the project's TAZ. For larger developments, the project must be entered into the latest version of the SANDAG Travel Demand Model to determine the project's average VMT.

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 (before taking adjustments for alternative modes and internal capture) 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. Theproject'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/scriptsthat 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 ofthe 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.

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 usesshould be input, and the VMT per Employee should be determined using the same method/scripts thatSANDAG utilizes to develop the VMT per Employee metric.

3. Retail/Service Projects

Calculate the change to area VMT using the SANDAG Travel Demand Model. To calculate the changein 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 VMTper 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 Resident and Employee maps. Based on the OPR Technical Advisory, each use should be analyzed separately, or simply focusing analysis on the dominant use, and comparing each result to the appropriate threshold.

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 Resident and Employee. Compare back to the appropriate threshold to determine if the impact is significant.

All project land uses should be input, and each individual project component should be evaluated per the appropriate metric based on land use type (i.e.residential, office/commercial, and retail) as described above.

5. Infill

Apply Infill quantitative analysis methodology outlined in Infill Areas Technical Memorandum (Appendix H) or use location-based screening maps for Infill Areas that are within Transit Opportunity Areas (TOAs), (Appendix D).

6. *Other Methods and 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 theVMT metric that is appropriate based on the land use type should be determined using the methodology described in Section 3.2.

Applicants may also consider the use of other methods, particularly for unique land-use project types, that are not captured through the SANDAG Travel Demand Model for analyzing VMT. Other methods may include, but are not limited to, qualitative analysis, the use of "Big Data," more refined parcel-level analysis, or use of the SANDAG SB 743 VMT Maps, which uses Census Tracts and does not account for external VMT trips outside of the San Diego County boundaries; as a result, may differ slightly from the TAZ analysis methodology adopted as part of the County's TSG.

The CEQA Guidelines define a "threshold of significance" to mean "an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant." 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."

Applicants that choose to deviate from the County's TSG will likely be subject to additional scrutiny on the substantial evidence and defensibility of findings of no significant VMT impacts, which may result in County staff not recommending approval. However, applicants can still at their discretion choose to take a project to Hearing despite not being recommended by County staff.

7. Apply VMT Reductions

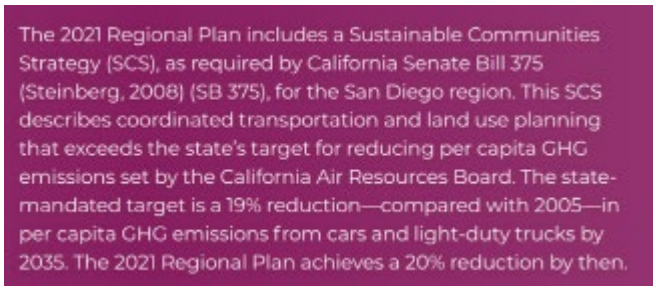
If the project includes TDM measures, the reduction in VMT due to each measure shall be calculated and can be applied to the project analysis. There are several resources for determining the reduction inVMT due to TDM measures, such as the California Air Pollution Control Officers Association (CAPCOA) Quantifying GHG Mitigation Measures Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (December 2021), 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) basedon 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 informationon VMT reduction and mitigation is provided in Section 3.5.

3.4. Cumulative VMT Impacts

Cumulative analysis is necessary to determine if a project contributes to future year 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. The SANDAG Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) demonstrates that VMT per resident and VMT per employee is expected to reduce over time and the RTP/SCS demonstrates how the SANDAG regional plan will meet State climate goals. If a project is consistent with the SANDAG RTP/SCS it is not necessary to perform separate cumulative VMT analysis since the RTP/SCS shows VMT rates reducing over time. If a project is not consistent with the RTP/SCS, a cumulative VMT analysis may be required.



The following provides thresholds for cumulative conditions:

- Cumulative Threshold for Residential Projects: Project and VMT/Employee: The project 2050 VMT/Capita is 15 percent below the *existing*-Regional average VMT per Resident.
- Cumulative Threshold for Employment Projects: The project 2050 VMT/Employee is 15 percent below the *existing* Regional average VMT per Employee.
- Cumulative Threshold for Regional Retail Projects: The project reduces or has no effect on the countywide total VMT under cumulative conditions.

Note on “Project’s Effect on VMT” for residential and employment projects: Measuring the ‘project’s effect on VMT’ is necessary under cumulative conditions to fully explain the project’s impact. A project effect on VMT under cumulative conditions would be considered significant if the Total VMT increases under the 2050 plus project condition compared to the no project condition.

The following provides guidance for performing cumulative analysis:

Step 1: Determine if the Project is consistent with land uses in the SANDAG Regional Plan 2050 model. To do this, compare the growth for the Project’s TAZ in 2050 vs. 2016. If the growth (either population/housing units or employment) captures the Project’s population/housing units or employment, then the Project is consistent with the RTP/SCS and cumulative analysis is not necessary.

Step 2: Determine if the Project has a less than significant Air Quality and Greenhouse Gas impact. If it has the less than significant impact, this indicates that the project meets Air Quality and GHG thresholds and is presumed to be consistent with the SANDAG RTP/SCS, and cumulative analysis is not necessary.

Step 3a: If a Project generates 2,400 daily trips or less (or daily trips that is appropriate for model sensitivity) then compare the Project’s 2050 VMT/capita or VMT/employee metric from the “General

Plan/Baseline" 2050 SANDAG model to the thresholds above. If the project has a VMT that is better than the threshold, the Project has a less than significant impact. If over the threshold, the project has a significant impact and mitigation may be required.

Step 3b: If the Project generates more than 2,400 daily trips complete Step 3a and perform a "project effect on regional VMT" analysis. The analysis should be performed using the SANDAG 2050 Regional Plan model.

3.5. 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 F 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 VMTproduced 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.

3.6. VMT Reduction and Mitigation Measures

To mitigate VMT related impacts, a project applicant must reduce the VMT generated on their project site. This can be done by reducing the number of automobile trips generated by the project, by reducing the distances that people drive to the project site, or both. VMT reductions are generally achieved through changes in a project's site design or the application of on-site measures and strategies designed to incentivize, or require, users to take alternate forms or transportation in-lieu of single occupancy vehicles. This is known as Transportation Demand Management (TDM).

Development projects that are identified to have VMT related impacts are required to develop a TDM Plan to mitigate their impacts to the extent feasible. A TDM Plan should identify all of the feasible TDM measures in which the project can incorporate into its design to fully mitigate its impacts or reduce the identified significant impacts to the extent feasible. TDM Plans typically include measures such as carpooling and vanpooling programs, promotion of alternative work schedules, teleworking programs, and increasing bicycle, pedestrian, and transit use. As such, these programs are designed to reduce VMT by incentivizing, or requiring, users to take alternative modes of travel in lieu of single occupancy vehicles. TDM programs are generally most effective in areas with robust multi-modal networks, transit access, and high land use densities that allow for shorter trip lengths. Therefore, most TDM strategies are not effective in rural areas.

Quantification of the VMT reductions included within a project's TDM plan shall be based on the methods outlined in the California Air Pollution Control Officers Association (CAPCOA) *Handbook for Analyzing GHG Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (GHG

Handbook), December 2021[1]. As noted previously, not all TDM measures are effective in rural areas; therefore, **Appendix G** outlines the measures within the CAPCOA GHG Handbook that can be applied within the land use zones of the County, as well as the sources for the variables that can be assumed within the calculations. Finally, only the measures intended to be applied at site/project level (Measures T-1 through T-16) can be included in a project's TDM plan. In the future, the County may develop a VMT Mitigation Fee Program which would fund and implement Plan/Community level TDM measures (Measures T-17 through T-30). If the County does develop and implement a VMT Mitigation Fee Program, projects who construct Plan/Community level measures, such as bicycle and pedestrian facilities, would be eligible for a fee credit.

A project applicant may include TDM measures not included within the CAPCOA GHG Handbook, or use calculation outside of the Appendix G within their TDM Plan if the following criteria is met:

1. A qualitative analysis can be completed to determine the total VMT or percent of overall VMT would be reduced with the proposed TDM Measure(s).
2. Substantial evidence can be presented to confirm the accuracy and feasibility of the VMT reduction associated with the proposed TDM Measure(s).
3. The it can be demonstrated that the TDM measures is not double counting reductions already included within the SANDAG model.
4. All measures and their associated calculations must be approved by County PDS staff.

3.7. Phase 2

As part of the "Phase 2" effort for the continued implementation of SB 743 and VMT, the Board directed County staff to conduct a Programmatic Environmental Impact Report (EIR) for Transit Opportunity Areas (TOAs); as well as use TOAs as a Reason for Adopting a Statement of Overriding on a project-by-project basis.

The Board also directed staff to study transitioning away from the use of Level of Service (LOS) as a General Plan Policy.

The Board also directed staff to work with SANDAG, San Diego Metropolitan Transit System (MTS) and North County Transit District (NCTD) to Develop a Regional VMT Mitigation Program; or work with the City of San Diego and/or Other Local Jurisdictions to develop regional or joint VMT mitigation program.

These programmatic options for addressing significant VMT impacts could include a VMT Impact Fee Program, TDM Ordinance, VMT Exchange, and/or a VMT Bank. Staff will also examine combining a community land trust with a VMT mitigation bank to create a path for environmental justice (EJ) and VMT opportunities within those communities. These options would offer a regional approach for achieving VMT reductions and are briefly described as follows:

VMT Based Fee Program – Development is assessed a fee based on the severity of their VMT related impact. The fee will be based on new development's fair share cost to implement off-site

[1] https://www.caleemod.com/documents/handbook/full_handbook.pdf

VMT reducing infrastructure to offset or reduce new development's impact to less than significant. The revenue collected from the fee program can then be used to implement the multi-modal infrastructure improvements outlined in the RTP, or other CIP programs.

VMT Mitigation Banking – Developments can buy VMT reduction credits from the County or other jurisdictions within the region, that are the result of previously constructed VMT reducing infrastructure or planned infrastructure that will be constructed within the near future. This program would operate very similar to a biological mitigation banking program, or the Carbon Offset program. The fees collected from this program would then be used to construct additional VMT reducing infrastructure in new locations, or be used to close gaps within the existing mulita-modal network, thus making the network more efficient.

VMT Exchange Program – Developments with VMT related impacts would work with the County, or other local jurisdictions, to fund and implement off-site VMT reducing infrastructure and/or programs to off-set their VMT related impacts. This program would allow new development within suburban and rural jurisdictions to invest in multi-modal/VMT reducing infrastructure in more urban jurisdictions where higher reductions are possible and more efficient.

Updates to the Transportation Study Guide will occur as the efforts of Phase 2 are finalized and adopted.

These concepts are further discussed in Appendix E – Technical Memorandums Programmatic VMT Mitigation Options.

Links to additional resources

- County SB 743 Website - https://www.sandiegocounty.gov/content/sdc/pds/SB743.html
- SANDAG - https://www.sandag.org/index.asp?fuseaction=home.home
- OPR Tech Advisory and FAQ - https://opr.ca.gov/ceqa/sb-743/
- CAPCOA - http://www.capcoa.org/documents/

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 authorityand 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 forthe 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 theCounty'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 pedestrianfacilities.
- Identify the necessary transportation entitlement conditions for land development projects.
- Outline the County's screening criteria, study area and methodologies to assess the potentialneed 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 toserve 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 travelrequirements 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. However, the Board directed staff to study transitioning away from the use of LOS as part of the General Plan Mobility Goals.
- 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 consistentwith

County Public Road Standards.

- A multi-modal transportation system that provides for the safe, accessible, convenient, andefficient 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

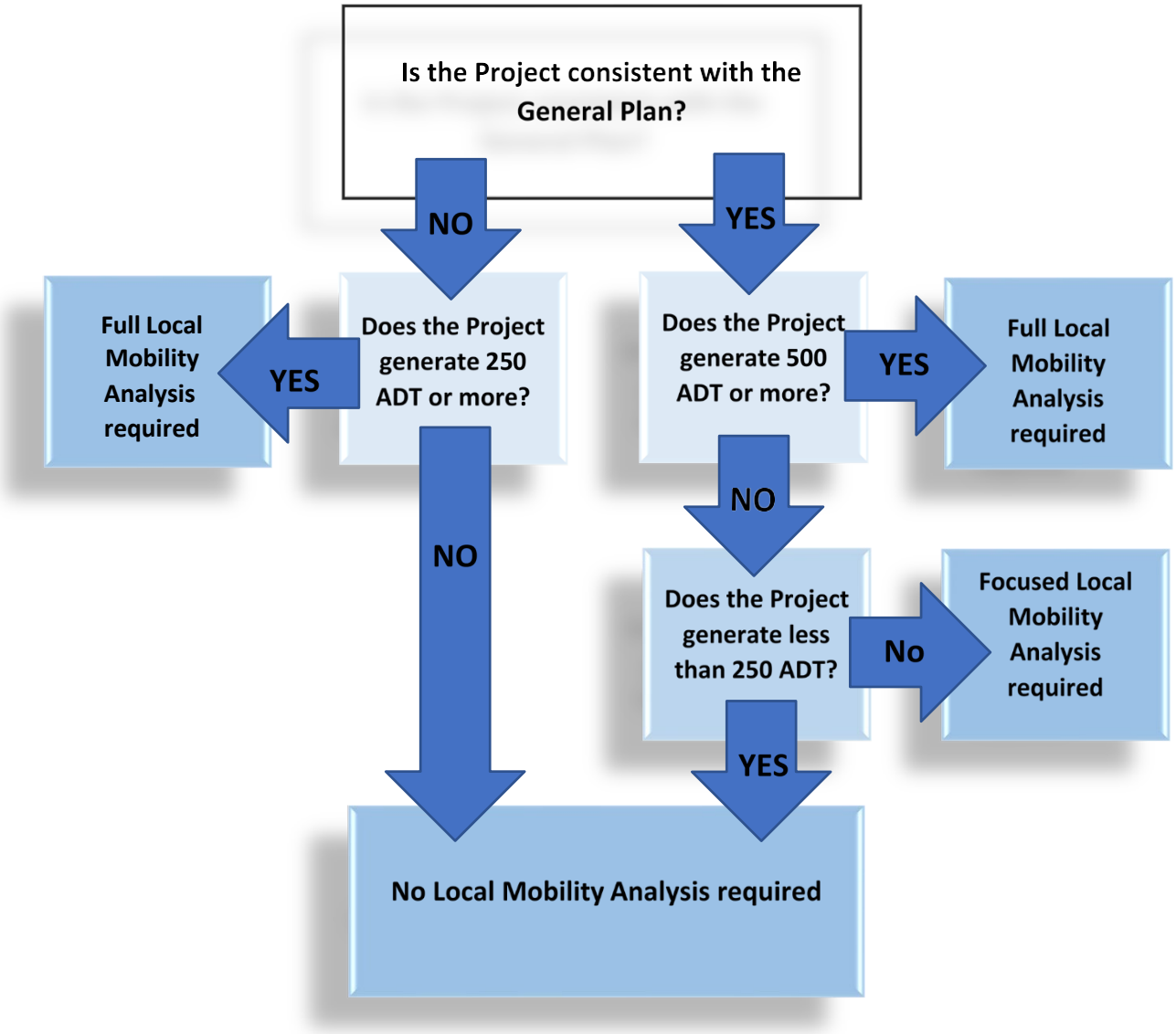
Discretionary projects may need to complete an LMA. The project's consistency with the General Planand estimated daily trips will determine the type of LMA that is required based on Table 4.

TABLE 5 - 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 travelmode, as follows:

Vehicle

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

TABLE 6 - 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 for private land development projects. For County-initiated projects, assessment of pedestrian bicycle; transit and trail facilities will be identified in coordination with County Department of Public Works and Department of Parks and Recreation. 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 byeach 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 Community Trails Master Plan (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 transportationand 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 stillvalid 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, thepeak 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 onthe 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 sessiontime 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, mediantype and width, pavement type and rating condition, cross slope, sidewalk, bicycle lane).
- Geometry (horizontal and vertical alignment, storage lengths, intersection/interchangeconfigurations, 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 closelyspaced 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 proposedambient 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 YearConditions to evaluate the *plus project* conditions.

- ***Phased Analysis*** (if necessary): For phased developments, include projections for the year thateach 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 Elementroadway 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 generationrates and best-fit equations developed through regression analysis.

- The (not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region. This guide provides average trip generation rates for a variety of land-use categories based on data collected solely within the San Diego region.
- For unique land uses, trip generation should be derived from local empirical data that includestrip generation samples from at least three (3) similar facilities. The facilities selected as samples should be approved by County Staff through a Scoping Agreement prior to data collection.
- For existing facilities that are being expanded, trip generation should be determined bysurveying 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 withina 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 mayalso 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 alternativemodes, 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) TDMmeasures. Consultant should propose the alternative modes reduction factor for the project to bereviewed and approved by County staff identified in the Scoping Agreement.

SANDAG trip reduction factors may also be considered for developments within ¼ mile walkingdistance 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 allthe 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-byreduction 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.

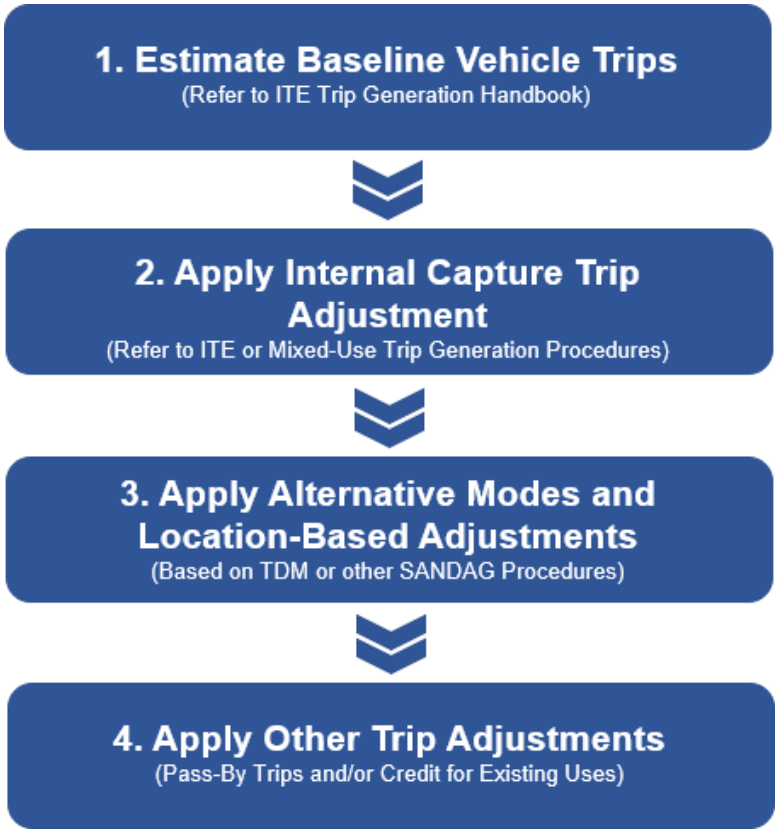
Truck Traffic

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 tripsshould 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 professionalengineering 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 vicinityof 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 thetrip 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 inisolation 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 determiningrequired 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 staffas 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 7 - 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 intersectionto 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 isrecommended.
- 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 isrecommended.
- 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 systemmanagement (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 TransportationPlan.

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 tripsto 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 improvethese 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 atLOS 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 improvethese 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 betteraccommodate 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 tosupport 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 relatedto 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 Planand 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 andsafety concerns:

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

TABLE 8 - 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 alignswith 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 fromeach 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 fourfeet adjacent to the project site.

The project should construct curb ramps/meet accessibility standards for any intersections adjacent tothe 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 projectdriveway.

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 (suchas 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 beconsistent 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 onpublic, 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 withthe 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 thatare 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.

The following additional resources can be found on the PDS Land Development webpage:

-Procedures for Evaluating Sight Distance
-Roads Centerline Ordinance User Guide
-Roads Improvement Plans User Guide

https://www.sandiegocounty.gov/content/sdc/pds/LandDevelopment.html

Appendix A: Scoping Agreement for Transportation Studies

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?	☐	☐
☐ **4. Infill Screening**		
a. Is the project location screened out using the County screening maps for Infill locations?	☐	☐

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

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).

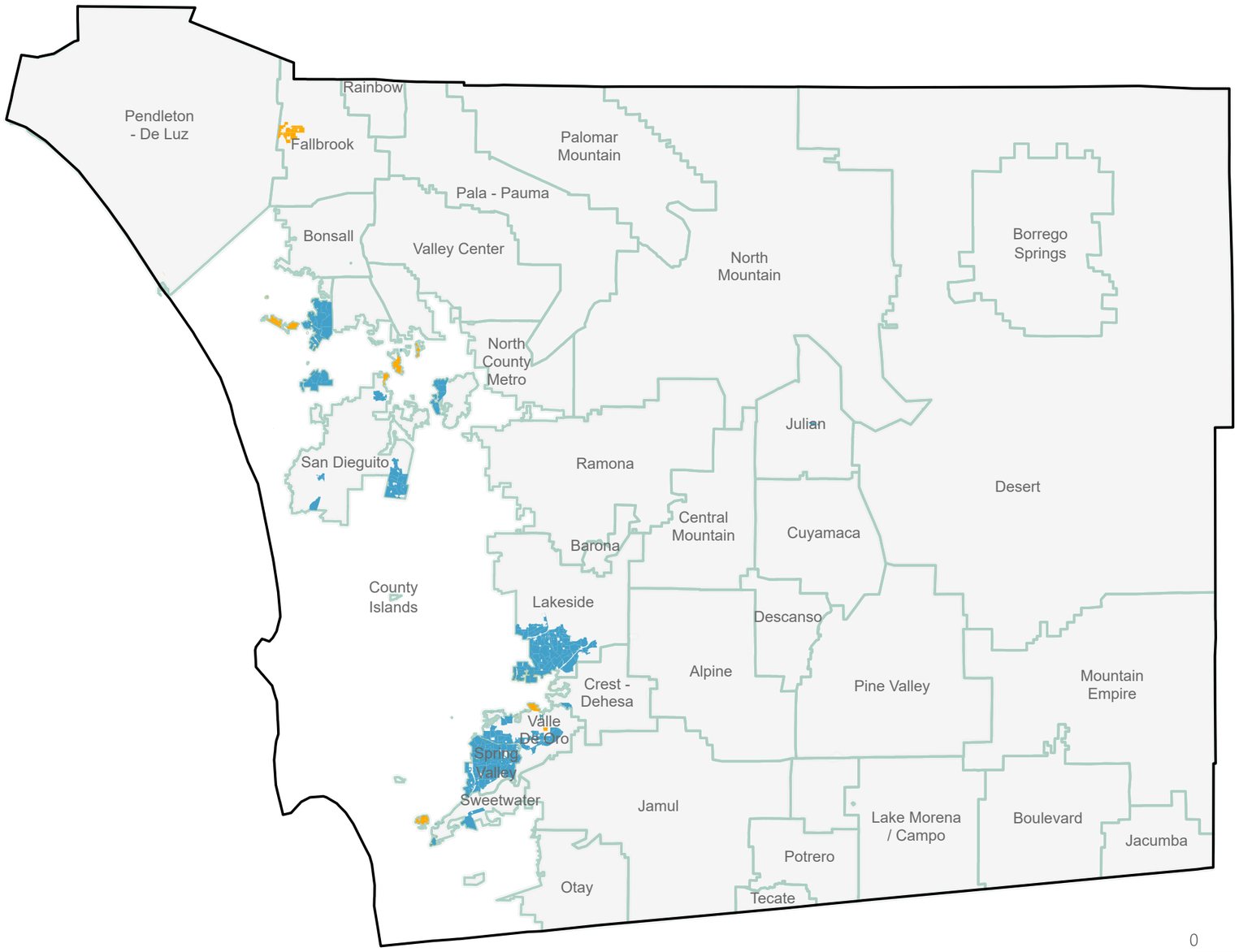
APPENDIX

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.

Appendix C: VMT Efficient Area Screening Maps

NOTE: The maps included within this appendix were derived using the most recent version of the SANDAG Activity Based Model (ABM 2+). ABM2+ is a peer reviewed model, designed for application in the San Diego Region's 2021 Regional Plan. ABM 2+ considers region's existing and future land use patterns, transportation network, and demographics. ABM2+ has also been develop to account for emerging technologies, including autonomous vehicles, shared mobility, ride hailing, transformative modes, and micro-mobility. It should be noted that SANDAG releases a new model series every four years, in association with the development and implementation of the RTP/SCS. As such, the VMT maps included within this Appendix are subject to change with the release of the next SANDAG Forecast Model Series (Series 15/ABM 3), which will be developed with the 2025 RTP/SCS.

The trip length adjustments, outlined under Section 3.2, were incorporated into the screening maps. Therefore, the VMT numbers provided within these maps will not match those provided on SANDAG's San Diego Region SB-743 VMT Maps. Additionally, due to the variability of results with small sample sizes, only TAZs with a minimum of 100 residents or 100 employees are reported.



Legend

- Average VMT per Resident 15% below SANDAG Regional Average
- Board Selected Infill
- SANDAG Region
- Community Plan Area

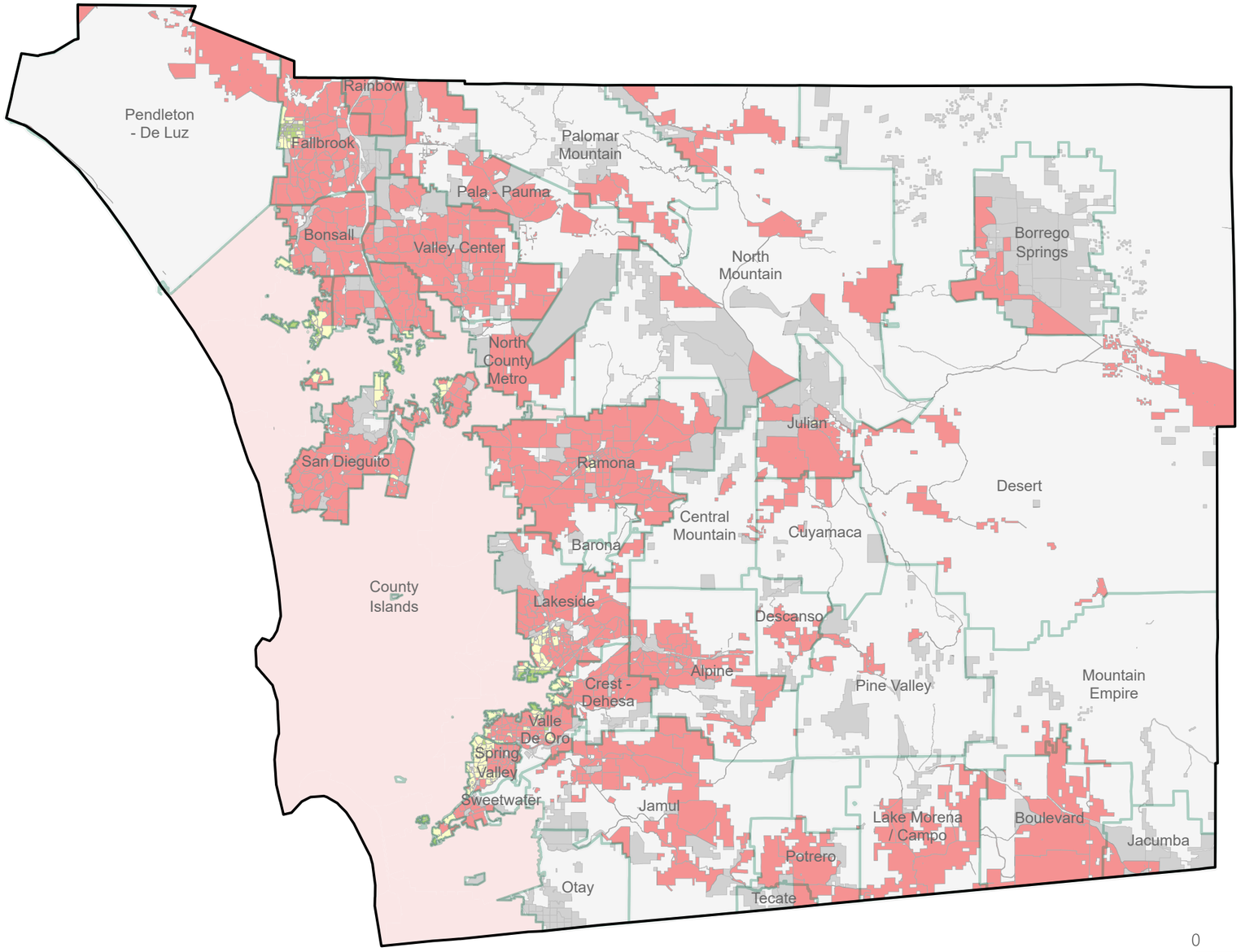
Board Selected Infill with VMT per Resident Efficient Areas

*Based on the SANDAG ABM 2+ Regional Plan Base Year Model

September 2022

N:\Projects\2021_Projects\0407_SD County SB 743 Continuation\GIS\ArcPro\ABM2Plus\ABM2Plus.aprx

VMT per Resident



Legend

- At least 15% below the SANDAG Regional Average
- 0% to 15% below the SANDAG Regional Average
- Above the SANDAG Regional Average
- Not Enough Data
- San Diego County Incorporated Cities
- SANDAG Region
- Community Plan Area

SANDAG Regional Average = 19.90 Vehicle Miles Traveled/Resident

*Based on the SANDAG ABM 2+ Regional Plan Base Year Model

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

May 9, 2022

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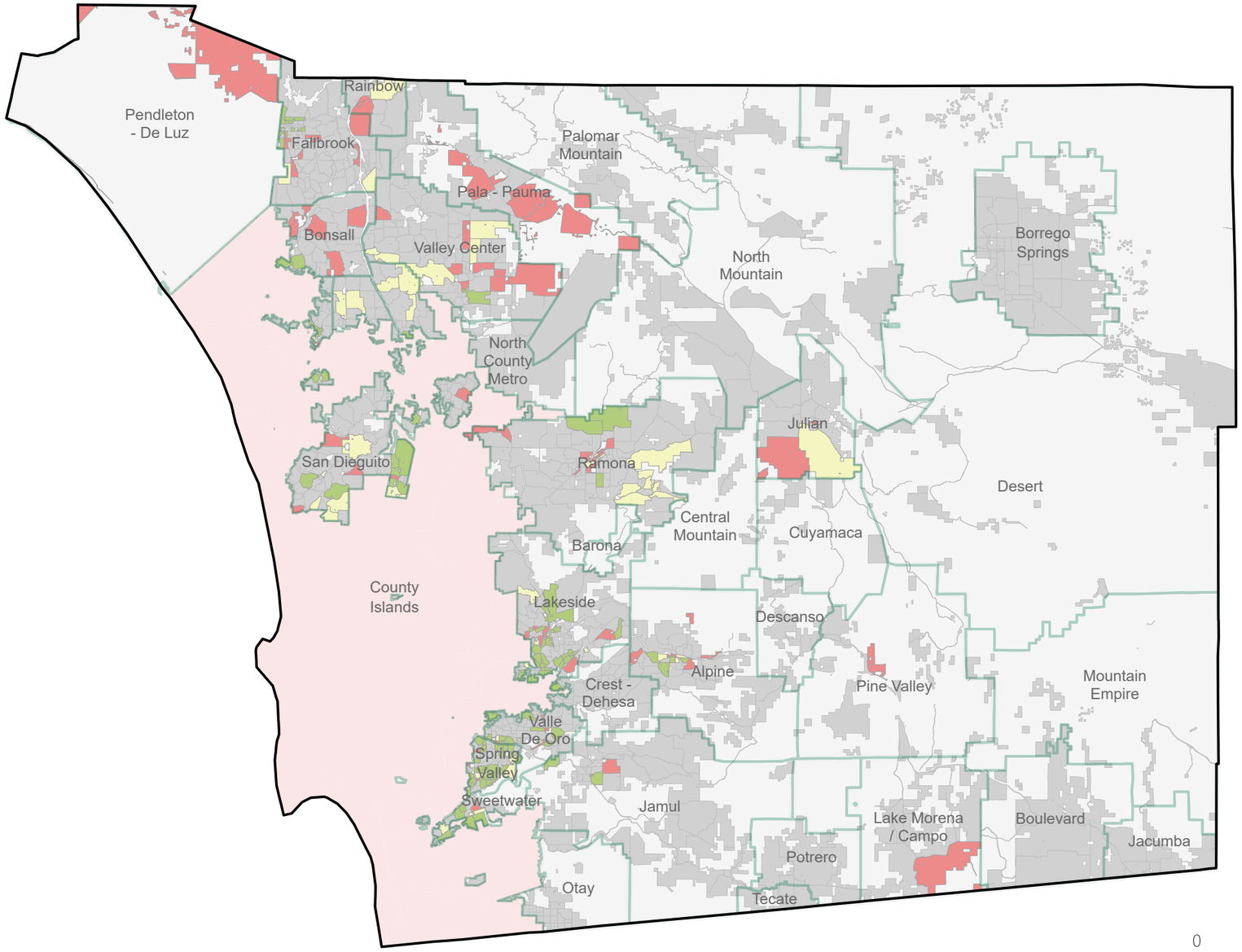
VMT per Service Population



Legend

- At least 15% below the SANDAG Regional Average
- 0% to 15% below the SANDAG Regional Average
- Above the SANDAG Regional Average
- Not Enough Data
- San Diego County Incorporated Cities
- SANDAG Region
- Community Plan Area

SANDAG Regional Average = 40.07 Vehicle Miles Traveled/Service Population

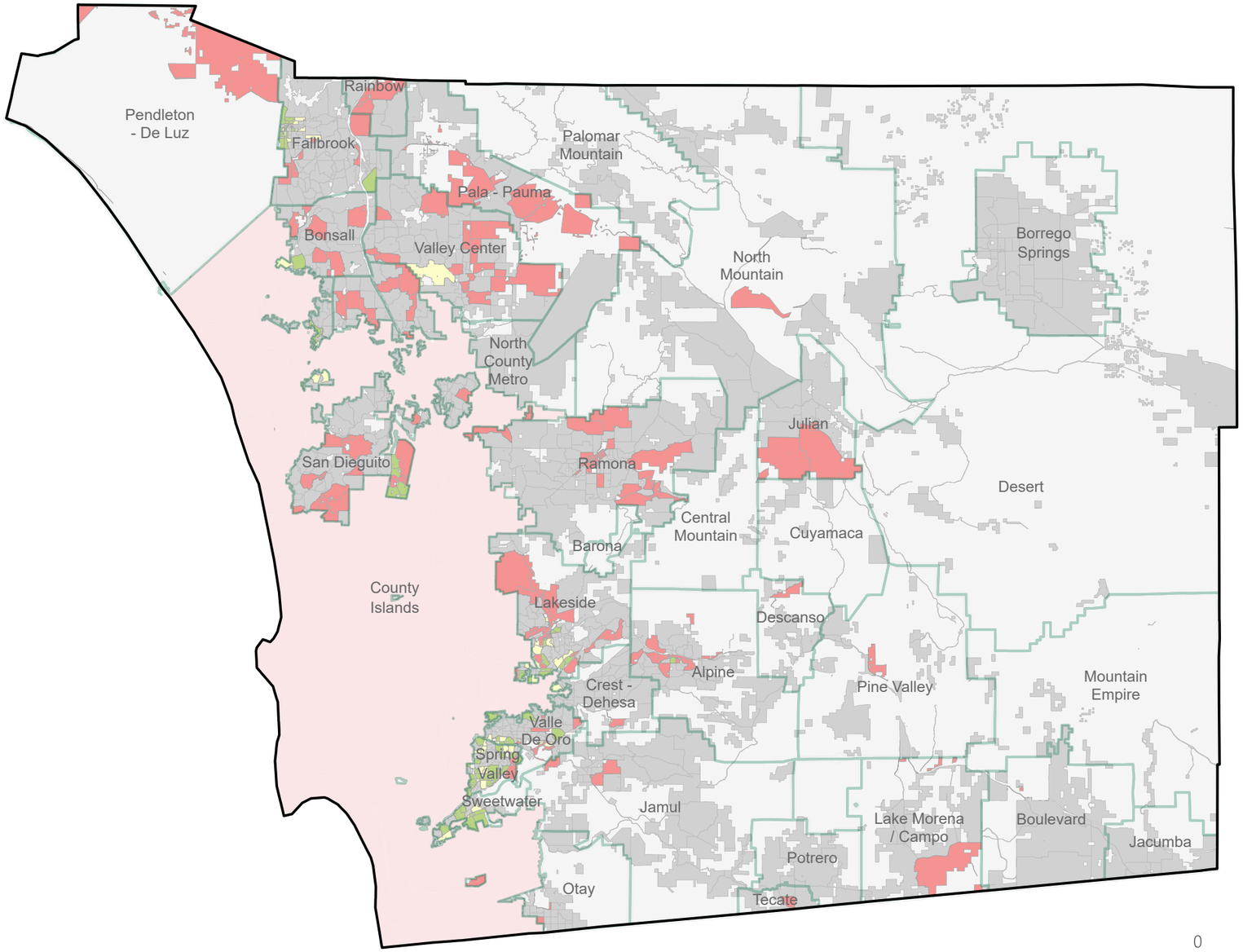
*Based on the SANDAG ABM 2+ Regional Plan Base Year Model

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

July 8, 2022

N:\Projects\2021_Projects\0407_SD County SB 743 Continuation\GIS\ArcPro\ABM2Plus\ABM2Plus.aprx

VMT per Employee



Legend

- At least 15% below the SANDAG Regional Average
- 0% to 15% below the SANDAG Regional Average
- Above the SANDAG Regional Average
- Not Enough Data
- San Diego County Incorporated Cities
- SANDAG Region
- Community Plan Area

SANDAG Regional Average = 20.60 Vehicle Miles Traveled/Employee

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

*Based on the SANDAG ABM 2+ Regional Plan Base Year Model

July 6, 2022

\\fpsd03.fpainc.local\data\Projects\2021_Projects\0407_SD County SB 743 Continuation\GIS\ArcPro\ABM2Plus\ABM2Plus.aprx

Appendix D: Infill Screening Technical Memorandum – Infill Areas within Transit Opportunity Areas

FEHR PEERS

Memorandum

Date: October 29, 2021

To: Jacob Armstrong and Damon Davis, County of San Diego

From: Katy Cole, Andrew Scher, Jon Stanton

Subject: Infill Areas in Unincorporated San Diego County

SD21-0407

Introduction

The County of San Diego is exploring how infill development will influence the process for evaluating transportation VMT impacts consistent with CEQA Guidelines Section 15064.3: *Determining the Significance of Transportation Impacts*. On September 27, 2013, Governor Jerry Brown signed Senate Bill 743 ("SB 743") into law changing the impact criteria for transportation impact analysis as part of CEQA compliance. The law and subsequent updates to the CEQA Guidelines Section 15064.3 eliminates automobile delay as a basis for determining significant impacts under CEQA. 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.

As part of the implementation of SB 743, the California Attorney General's Office of Planning and Research (OPR) produced the Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018). The technical advisory contains suggestions on evaluating transportation impacts including information on when a VMT analysis is necessary and suggestions on characteristics of projects that can be screened from performing analysis. In consideration of SB 743's legislative intent related to infill development and the OPR information about screening projects that meet various characteristics, the County set out to understand the locations within the unincorporated area that may be considered an infill location. This information could be used

to help inform the VMT transportation analysis either as a simple project consideration or to help with future county planning efforts.

To understand what may be considered "infill development" in the unincorporated areas of San Diego County we evaluated multiple land use and transportation network variables to create a quantitative definition for "infill development" in the County. The following sections summarize a methodology for selecting values that define infill development and reflect the intent of the law.

Qualitative Definitions of "Infill" Development

To identify areas where new development would be largely considered as "infill", the term "infill" must be defined, then quantitative values set that would meet the definition of infill.

Infill development patterns have been studies for decades by researchers and each research study and paper has provided varying definitions for "infill" development. *Developing Site Plan Standards for Infill* (Center for Urban Policy Research, Edward J. Bloustein School of Planning & Public Policy Rutgers, The State University of New Jersey New Brunswick, New Jersey) provides a summary the wide variety of definitions for "infill" as shown on Exhibit 1:

TABLE 1.1
Illustrative Definitions of Infill

1. "The development of new housing or other uses on scattered vacant sites in a built-up area." (Moskowitz and Lindbloom 2004.)
2. Infill is the "development of vacant or remnant lands passed over by previous development in urban areas." Redevelopment is "the act or process of redeveloping; *esp.:* renovation of a blighted area. Replacement, remodeling, or reuse of existing structures to accommodate new development." (Otak, Inc. 1999.)
3. "The construction of new buildings on vacant lots, filling a "hole" in the built environment." (Downtown Brookings, Inc. 2004.)
4. "The construction of new buildings along the traditional commercial street. These new buildings relate harmoniously with the older buildings which surround them. Since these buildings are often constructed on vacant lots, thus filling a 'hole' in the street, they are called infill." (City of San Bernardino 2002.)
5. Infill is "the new development of vacant, abandoned, passed over, or underutilized land within built-up areas of existing communities, where infrastructure is already in place. Infill also includes redevelopment of lots in those areas. Redevelopment is described as encompassing construction in previously developed areas, which may include the demolition of existing structures and building new structures or the substantial renovation of existing structures, often changing form and function." (State of Maryland 2001.)
6. "The creative recycling of vacant or underutilized lands within cities and suburbs." (Northeast–Midwest Institute and Congress for New Urbanism 2001.)
7. "Infill development refers to construction of new housing, workplaces, shops, and other facilities within existing urban or suburban areas. This development can be of several different types: building on vacant lots; reuse of underutilized sites, such as parking lots and old industrial sites; and rehabilitation or expansion of existing buildings." (Wheeler 2002.)
8. An infill lot is defined as "any lot that is bounded on one or more sides by lots with existing residences, in an established neighborhood." (Village of Glenview 2003.)
9. "Infill is development that occurs on vacant or abandoned parcels in an otherwise built-up portion of the city." (City of Frederick 2002.)
10. "Urban infill and redevelopment area means an area or areas designated by a local government where (a) public services such as water and wastewater, transportation, schools, and recreation are already available or are scheduled to be provided in an adopted five-year schedule of capital improvements; (b) the area (or one or more neighborhoods within the area) suffers from pervasive poverty, unemployment, and general distress as defined by s. 290.0058 [1998 Florida statutes, chapter 290, section 0058]; (c) the area exhibits a proportion of properties that are substandard, overcrowded, dilapidated, vacant or abandoned, or functionally obsolete that is higher than the average for the local government; (d) more than 50 percent of the area is within one-quarter mile of a transit stop, or a sufficient number of such transit stops will be made available concurrent with the designation; and (e) the area includes or is adjacent to community redevelopment areas, brownfields, enterprise zones, or Main Street programs, or has been designated by the state or federal government as an urban redevelopment, revitalization, or infill area under empowerment zone, enterprise community, or brownfield showcase community programs or similar programs." (State of Florida 2005.)

TABLE 1.1, continued

11. "Developing on empty lots of land within an urban area rather than on new undeveloped land outside the city or town." (State of Massachusetts n.d.)
12. "In housing construction, the process of developing open areas within an established area before developing outside the established area." (Rosner and Rosner 1996.)
13. "Development on vacant lots or through redevelopment to create additional new residential units." (City of Burlington 1994.)
14. "The development of vacant land that was bypassed by earlier waves of development and is now largely surrounded by developed land." (Clark County Board of County Commissioners 2005.)
15. "Development that occurs on a site after completion of the initial development of the area." (Calgary Area, Inc. 1999.)
16. "Infill development is simply redevelopment within existing developments." (Abalos 2003.)
17. "Residential or nonresidential development that occurs on vacant sites scattered throughout the more intensely developed areas of municipalities. Generally, these sites are vacant because they were once considered of insufficient size for development, because an existing building located on the site was demolished, or because there were other, more desirable sites for development." (Schultz and Kasen 1984.)
18. Infill is "development on vacant sites in urbanized areas and redevelopment of areas contiguous to urban development where all services and facilities are projected to have capacity to accommodate additional demand." (Davis 2004.)
19. Infill development is "the process of developing vacant or underused parcels within existing urban areas that are already largely developed." (Municipal Research and Services Center of Washington 1997.)
20. "Infill is the creative recycling of vacant or underutilized lands within cities and suburbs. Successful infill often includes new development on vacant lots within urbanized areas, redevelopment of underused buildings and sites, and the rehabilitation of historic buildings for new uses." (Northeast–Midwest Institute and Congress for New Urbanism 2001.)
21. "Unlike reuse, infill occurs on smaller tracts of vacant land in otherwise developed areas." (Envision Utah 2002.)
22. Infill means "the development of new housing or other buildings on scattered vacant lots in a built-up area." Redevelopment means "the removal or replacement or adaptive reuse of an existing structure or of land from which previous improvements have been removed, including the conservation or rehabilitation of any structure." (New Jersey State Planning Commission 2001.)
23. Infill "is defined as development that occurs on previously developed lots within existing developed areas." (Nisenson 2005).

Exhibit 1: Excerpt from Developing Site Plan Standards for Infill (Center for Urban Policy Research, Edward J. Bloustein School of Planning & Public Policy Rutgers, The State University of New Jersey New Brunswick, New Jersey)

Infill development is defined by OPR as "…building within unused and underutilized lands within existing development patterns, typically but not exclusively within urban areas." (OPR)[1]. A definition for Infill is also codified in California's Public Resources Code (PRC) §21061.3:

> "Infill site" means a site in an urbanized area that meets either of the following criteria:
>
> (a) The site has not been previously developed for urban uses and both of the following apply:
>
> (1) The site is immediately adjacent to parcels that are developed with qualified urban uses, or at least 75 percent of the perimeter of the site adjoins parcels that are developed with qualified urban uses, and the remaining 25 percent of the site adjoins parcels that have previously been developed for qualified urban uses.
>
> (2) No parcel within the site has been created within the past 10 years unless the parcel was created as a result of the plan of a redevelopment agency.
>
> (b) The site has been previously developed for qualified urban uses.[2]

Both definitions refer to development of unused land or redevelopment of land within urban areas. Therefore, if urban areas can be geographically defined within the Unincorporated County, most development within those geographic areas would meet the above standards of having adjacent urban uses and be considered infill. In addition, "urban areas" as referenced by OPR are referring the US Census Bureau's definition of infill. For the 2020 Census, the following documentation is provided on the definition of urban:

> *The Census Bureau proposes to begin the delineation process by identifying and aggregating contiguous census blocks each having a housing unit density of at least 385 housing units per square mile. This aggregation of continuous census blocks would be known as the "initial urban area core." The initial urban area core must encompass at least 385 housing units (consistent with the requirement for at least 1,000 people in the 2010 criteria).*[3]

---

[1] OPR: https://opr.ca.gov/planning/land-use/infill-development/

[2] PRC §21061.3: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=21061.3

[3] https://www.federalregister.gov/documents/2021/02/19/2021-03412/urban-areas-for-the-2020-census-proposed-criteria#p-44

Early efforts to define urban areas began with characterizing urban sprawl in the 1990's (Pendall 1999)[4], but the first literature that considered a comprehensive set of variables to define urban areas was Cervero & Kockelman (1997) who developed the '3 D's'; Density, Diversity, and Design. The 3 D's included such built environment variables as population density, mix of land uses, and the design of infrastructure (such as street intersection density)[5]. These would be updated by Ewing and Cervero (2010) to 5 D's; adding Destination accessibility and Distance to transit[6]. The 5 D's have become the framework for subsequent literature which has further refined and added variables that compose each of the D's.

Defining places was further refined by Salon (2015)[7] and Frost (2018)[8]. For example, Salon (2015) defined places such as: Central City, Urban, Suburban, Rural-in-Urban, and Rural Places. Many variables representing the built environment were collected based on their relationship and aggregated into key 'factors' representing the 'Ds'.

Creating Quantitative Values for Infill

The analysis to develop an infill definition and criteria was based on the socioeconomic data from the San Diego Association of Governments (SANDAG) Activity-Based Model (ABM) Series 13. The socioeconomic data is provided by traffic analysis zone (TAZ). The core concept of the three 'Ds' and factors provides a framework for selecting appropriate variables and setting thresholds based on the literature. The following data was compiled into maps and evaluated as part of the process to define infill:

- Population density
- Housing density
- Employment density
- Intersection density
- Access to jobs within a 15 mile radius
- Access to shopping/restaurants within a one-mile radius

---

[4] Pendall, R. (1999). Do land-use controls cause sprawl? Environment and Planning B: Planning and Design, 26(4), 555–571. https://doi.org/10.1068/b260555

[5] Cervero, R., & Kockelman, K. (1997). Travel demand and the 3Ds: Density, diversity, and design. Transportation Research Part D: Transport and Environment, 2(3), 199–219. https://doi.org/10.1016/S1361-9209(97)00009-6

[6] Ewing, R., & Cervero, R. (2010). Travel and the Built Environment: A Meta-Analysis. Journal of the American Planning Association, 76(3), 265–294. https://doi.org/10.1080/01944361003766766

[7] Salon, D. (2015). Heterogeneity in the relationship between the built environment and driving: Focus on neighborhood type and travel purpose. Research in Transportation Economics, 52, 34–45. https://doi.org/10.1016/j.retrec.2015.10.008

[8] Frost, A. R. (2017). Quantifying the sustainability performance of urban form in California / by Alexander Rijiro Frost. San Diego State University.

Maps of all metrics that were studied as part of defining the infill definition are attached as **Figures 1-13**.

Based on review of each of these maps and the literature review, the following data was considered the largest predictor for "infill" and the specific criteria for each is defined as follows:

1. **Household density.** Household density above 385 housing units/square mile was selected based on the US Census definition for urban area.[9] Household density fulfills the density factor. Figure 1 below (and attached in higher resolution) shows Household Density above 385 units/square mile in the Unincorporated County.

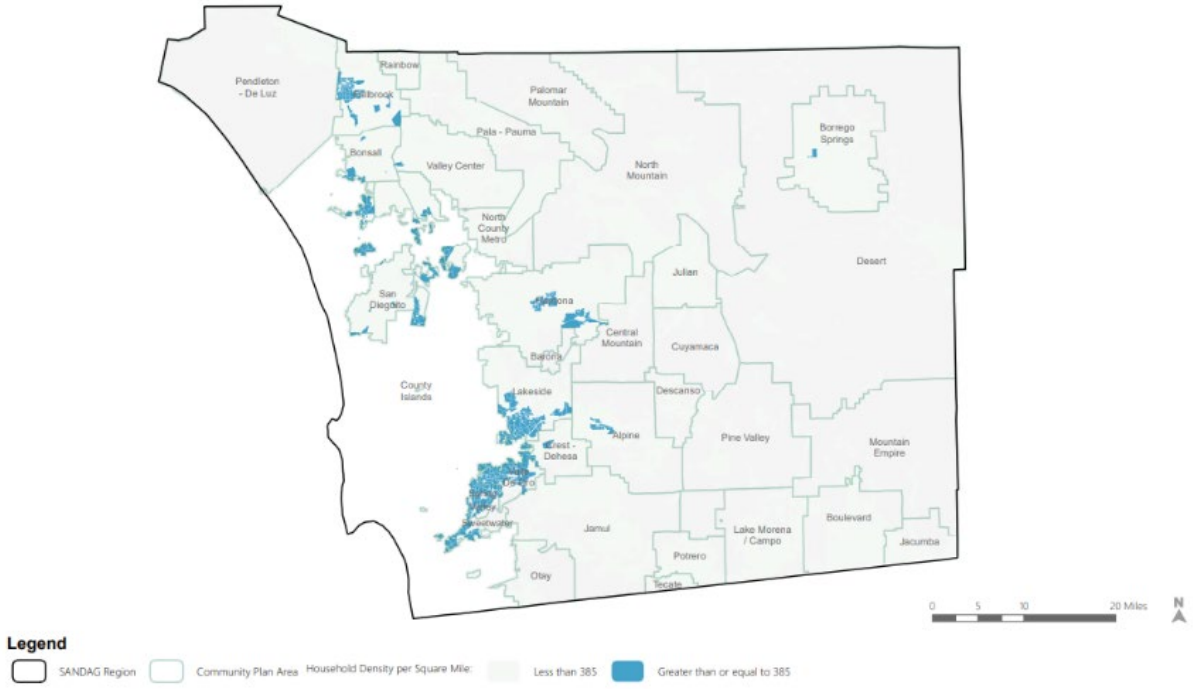


Figure 1: Household Density in Unincorporated San Diego County

[9] https://www.federalregister.gov/d/2021-03412/p-44

2. **Intersection density.** Intersection density above 128 intersections/square mile matches Frost (2018) average value for 'Urban Places'[7]. Intersection density fulfills the design factor. Figure 2 below (and attached in higher resolution) shows Intersection Density above 128 intersections/square mile in the Unincorporated County.

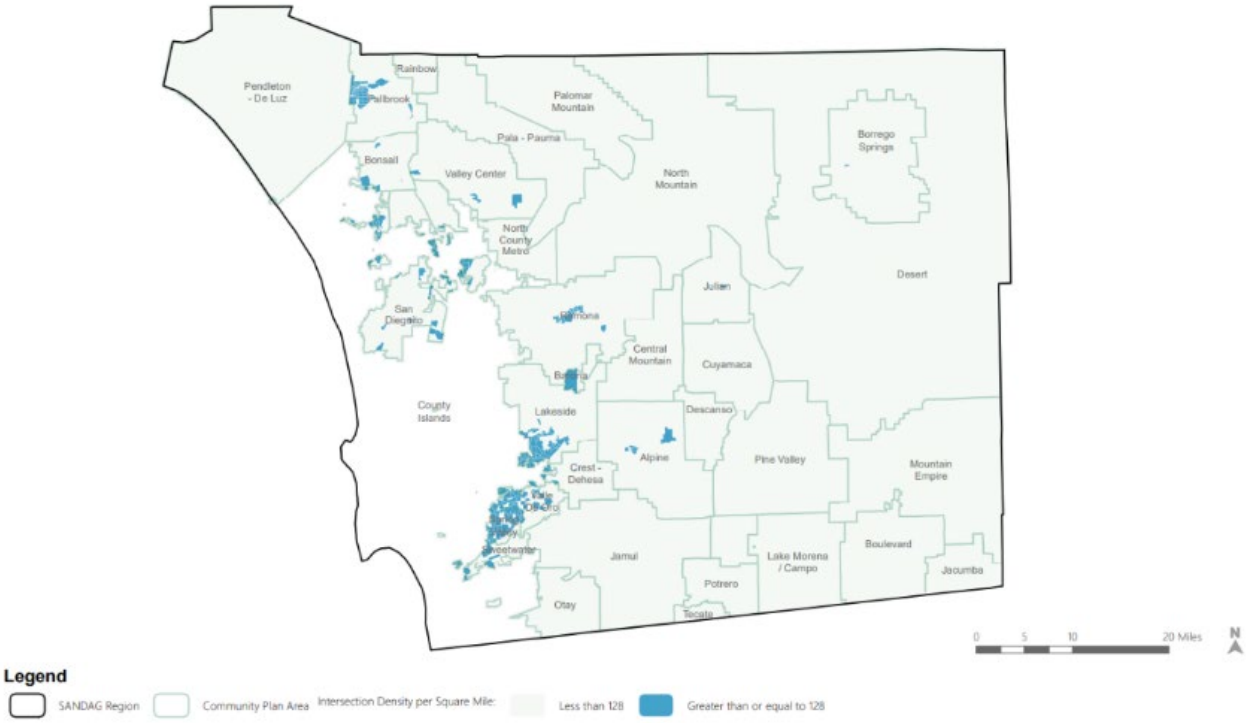


Figure 2: Intersection Density in Unincorporated San Diego County

3. **Jobs Accessibility.**
   Job Accessibility of 12.73 is the average value for local employment accessibility in Salon (2014).[6] Jobs accessibility is measured as an inverse distance-weighted sum of jobs within a 5-mile radius. The current variable used for jobs accessibility for Unincorporated County areas uses an inverse distance-weighted sum for areas within a 15-mile radius. Jobs accessibility fulfills the destination accessibility factor, and more broadly the diversity factor. Figure 3 shows Jobs Accessibility above 12.73 in the Unincorporated County.

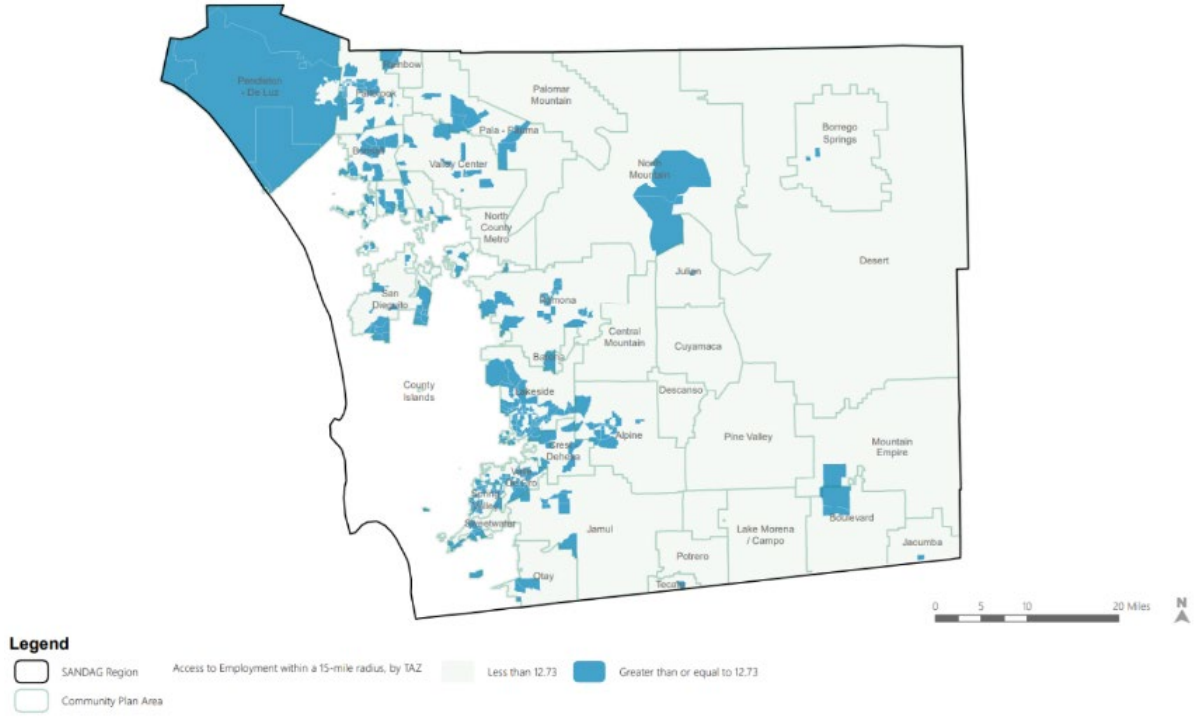


Figure 1: Jobs Accessibility in Unincorporated San Diego County

These variables, while limited compared to the number used in literature, are appropriate in representing the core aspects of the three D's and are among the largest contributing variables to their respective factors. Using the above metrics and cutoff values for Unincorporated County areas creates a narrow selection of geographic areas that are visually and intuitively associated with urban development. Development in dense areas with high job accessibility support the three D's, leading to more diversity in land use, demand for multimodal infrastructure, and shorter vehicle trips which reduce greenhouse gasses.

Results

Applying Infill Values

The above values were used to categorize Traffic Analysis Zones (TAZs) in the Unincorporated County. Out of 1,104 TAZs that lie within the Unincorporated areas of the County, 138 meet the above criteria for household density, intersection density, and jobs accessibility. **Figure 4** shows a map of TAZs that meet the thresholds for urban places and infill in blue.

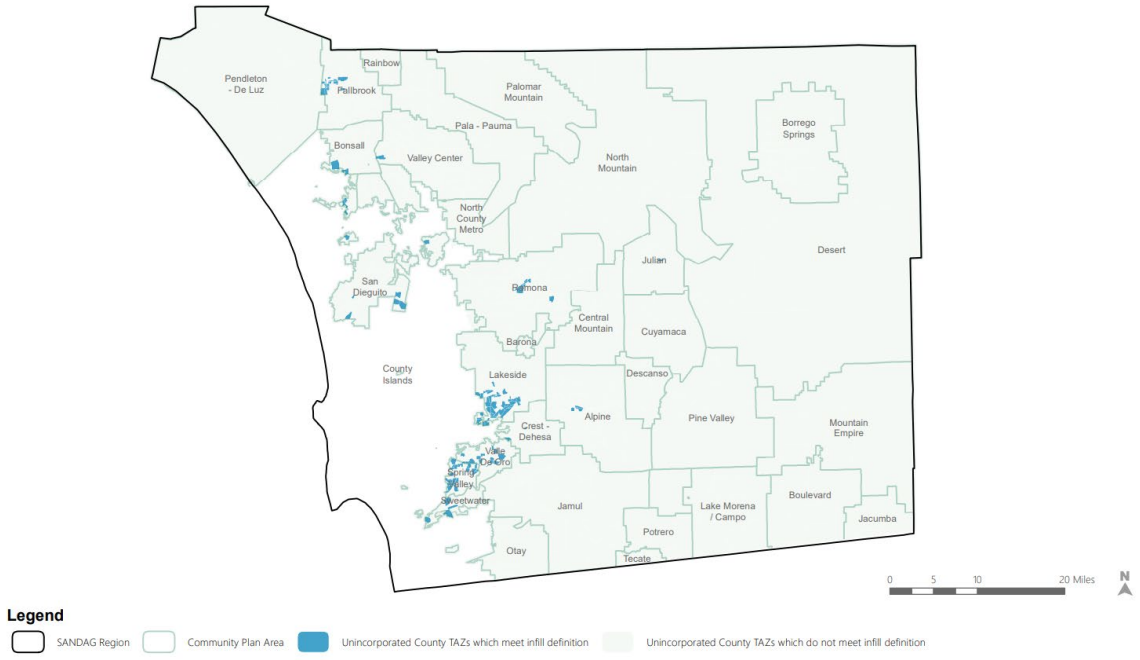


Figure 2: Infill Areas in the Unincorporated San Diego County

The areas that meet the infill definition generally align with intuitive concepts of urban areas. These locations are close to incorporated cities and within the sphere of development for urbanized San Diego. Specifically, core areas of Fallbrook, San Dieguito, Bonsall, Ramona (along Main Street), Lakeside, Valle De Oro, Spring Valley, Alpine, and Sweetwater all meet the definition.

These areas meet the household and intersection density requirements, indicating a certain level of development and compactness to development. There is reasonable access to jobs, and jobs are close enough to be potentially accessible to alternative modes of transportation. Further, developments that occur in these areas would likely meet definitions of infill – being adjacent to urban uses or located in an area with majority urban uses.

Other Considerations

The analysis looked at a variety of other considerations as follows:

- ***Are there infill areas in high fire hazard areas?*** – **Figure 5** displays the results of overlaying the fire severity with the infill areas based on the definition in this technical memorandum. The majority of infill areas are outside of high and very high fire severity zones.
- ***How do the infill areas align with Senate Bill 9 Urbanized Areas?*** – **Figure 6** displays the results of overlaying the SB 9 Urbanized Areas with the infill areas based on the definition in this technical memorandum. All infill areas fall within the SB 9 Urbanized Areas, with the exception of one small area within the Valley Center Community Plan. SB 9 is legislation that was signed into law on September 16, 2021 that allows for the ministerial approval of housing applications that split a parcel into two separate parcels, each parcel with 2 residential units under specific conditions. For housing proposals in an unincorporated area, the development must be located within a US Census Bureau Urbanized Area.
- ***How do the infill areas align with SB 330 Affected Census Designated Places (CDPs)?*** – **Figure 7** displays the results of overalying the SB 330 Affected CDPs with the infill the infill areas based on the definition in this technical memorandum. Many of the infill areas fall within the SB 330 Affected CDPs, with the exception of infill designations in Fallbrook, Bonsall, Valley Center, North County Metro, San Dieguito, Ramona, Lakeside, and Spring Valley. SB 330 is legislation that was signed into law on October 9, 2019 and makes changes to the Permit Streamlining Act and the Housing Accountability Act and establishes the Housing Crisis Act.
- ***Are there other options for expanding and "smoothing" out the infill areas?*** – The County team was curious to explore other options for displaying the infill areas to smooth out the results and provide a larger infill context. Fehr & Peers and County staff discussed two options that are displayed on **Figures 14 and 15**.
    1. Figure 14 displays an option to include any County Village area that contains an infill area. The map shows the original infill areas in blue and the Village area in green.
    2. Figure 15 displays an option in include any TAZ that is adjacent to an infill area. The map shows the original infill areas in blue and the adjacent TAZs in green.

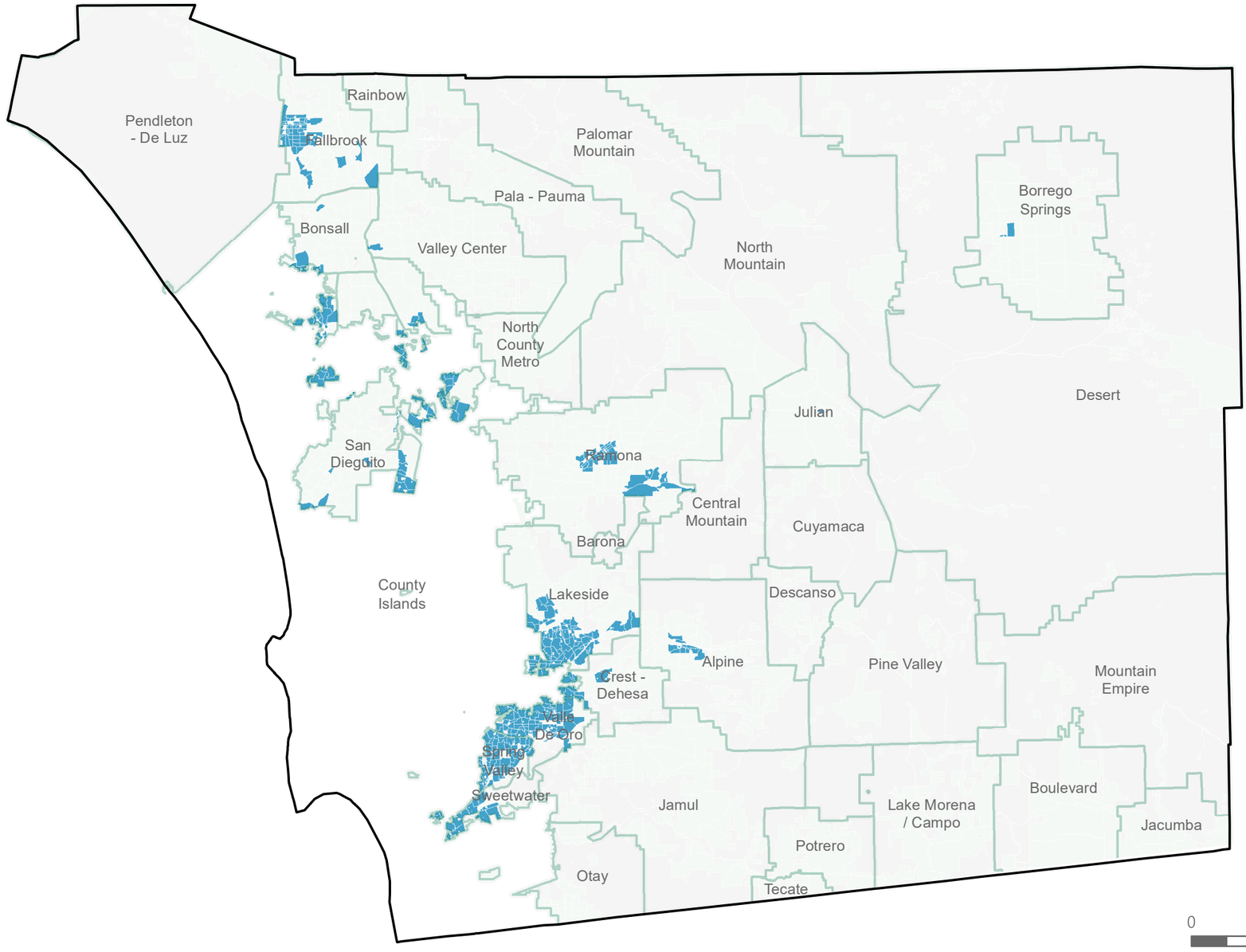
Conclusion

Using the chosen key variables/analysis to define urban places provides a representation of urban areas in the Unincorporated County. These variables provide the foundation for defining infill locations within the Unincorporated County. With guidance from County counsel, the County could use this information to establish a new SB 743 related screening criteria and allow the locations to be screened from performing VMT analysis. This would require evidence to support the determination that projects in these locations would have a less than significant transportation impact and meet the intent of SB 743. Another option is that the County could use

this information as a consideration when evaluating a project and use it to help make the case for adopting a statement of overriding considerations for a project that has a significant VMT impact. Additional County Counsel input is recommended to determine the implications of these options.

Figure 10: Employment Accessibility by TAZ

Draft



Legend

SANDAG Region | Community Plan Area | Household Density per Square Mile: | Less than 385 | Greater than or equal to 385

Figure 1: Household Density in Unincorporated San Diego County

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021

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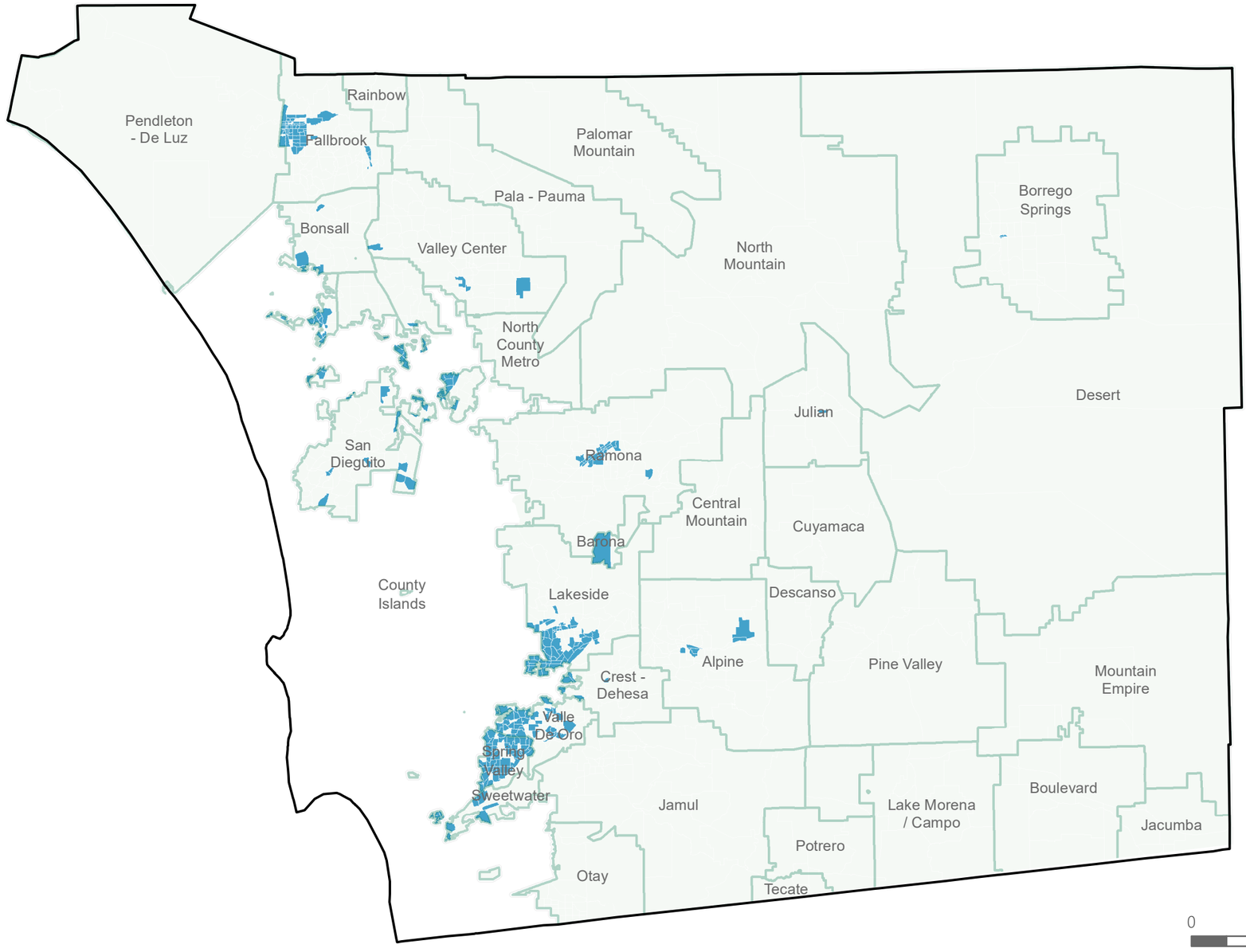


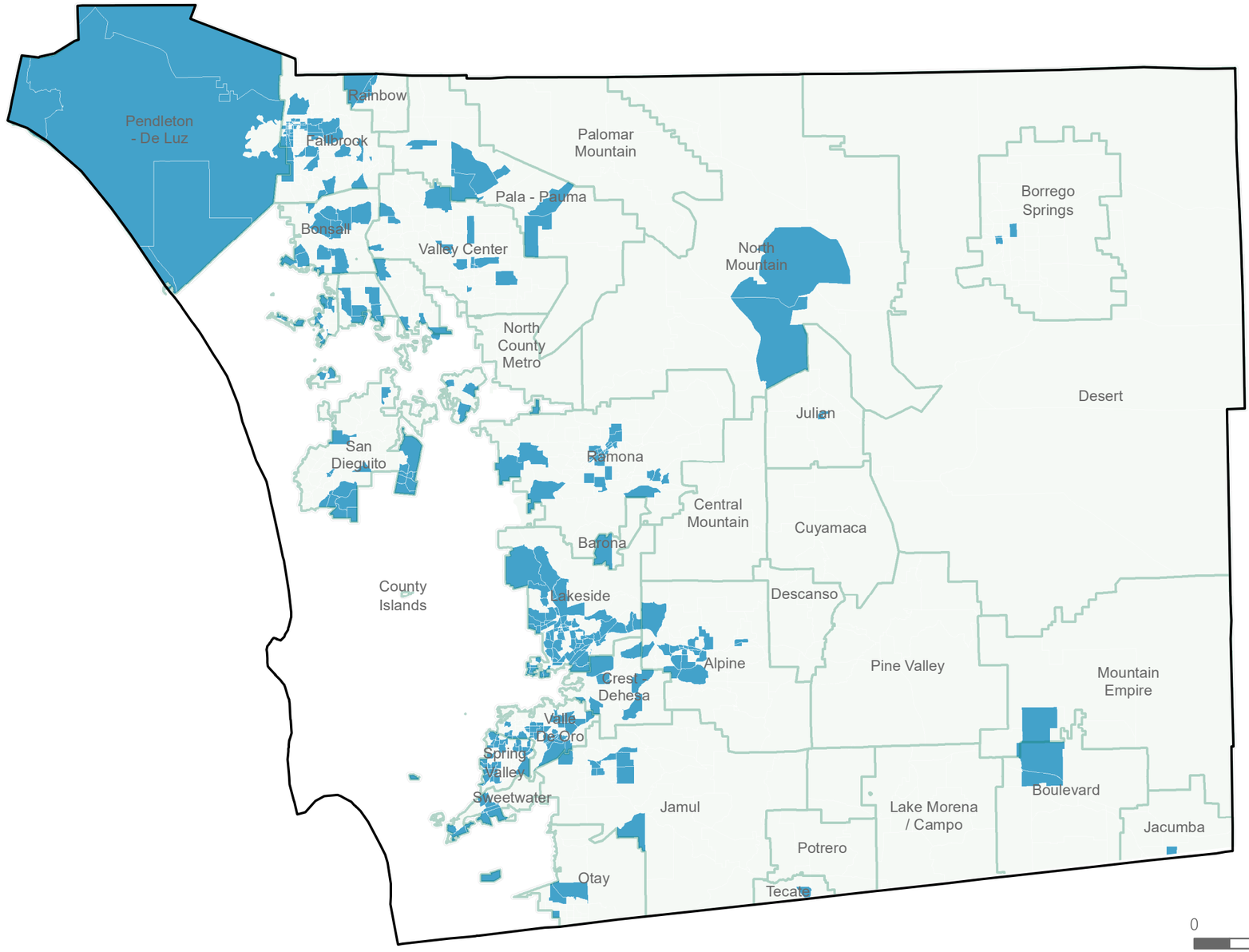
Legend

SANDAG Region | Community Plan Area | Intersection Density per Square Mile: | Less than 128 | Greater than or equal to 128

Figure 2: Intersection Density in Unincorporated San Diego County

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021



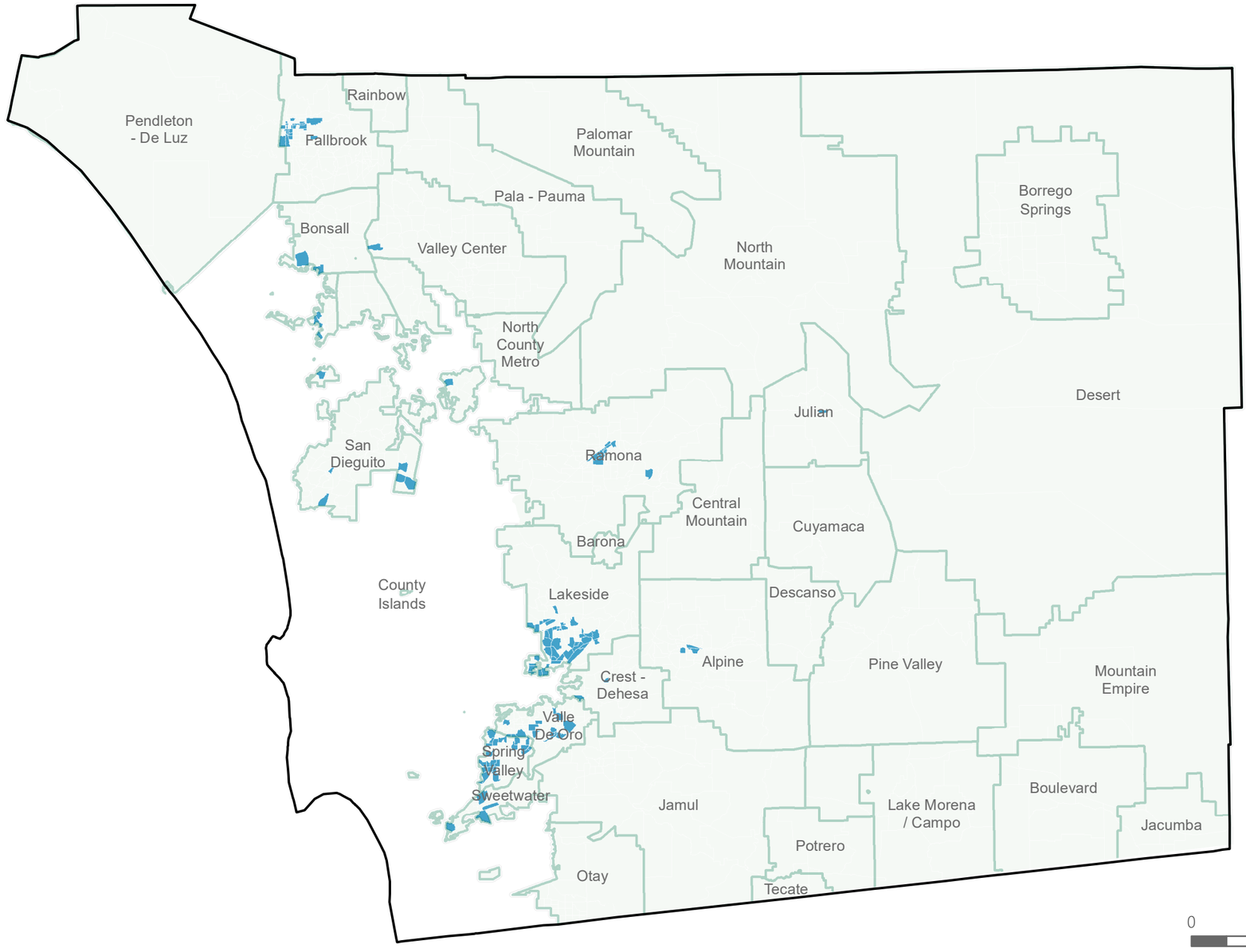
Legend

- SANDAG Region
- Community Plan Area
- Access to Employment within a 15-mile radius, by TAZ
  - Less than 12.73
  - Greater than or equal to 12.73

Figure 3: Employment Accessibility in Unincorporated San Diego County

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021



Legend

- SANDAG Region
- Community Plan Area
- Unincorporated County TAZs which meet infill definition
- Unincorporated County TAZs which do not meet infill definition

Figure 4: Areas of the Unincorporated County Which Meet Infill Definition

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021

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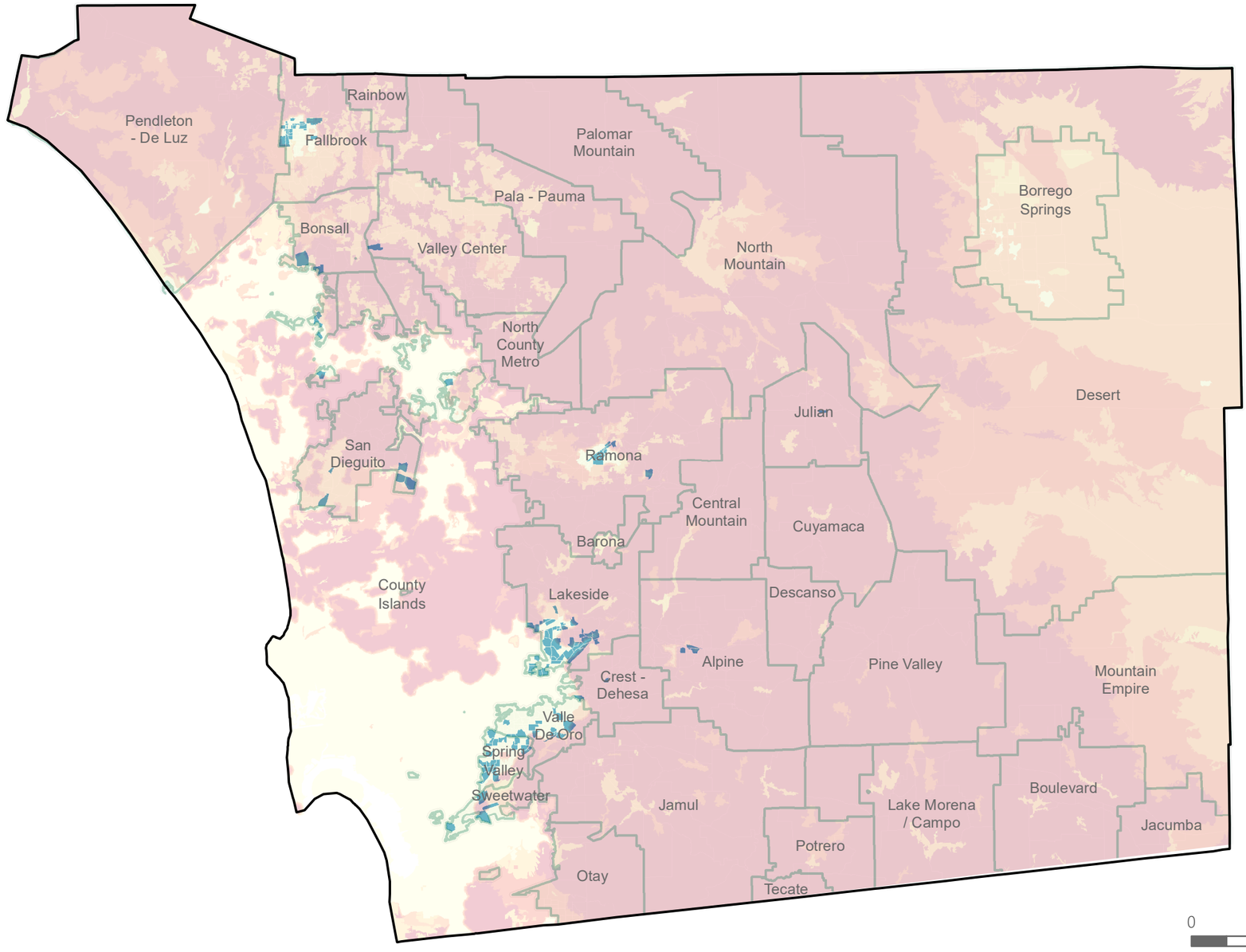

Legend

- SANDAG Region
- Community Plan Area
- Fire Hazard Severity Zone
  - Very High
  - High
  - Moderate
- Non-Wildland/Non-Urban
- Urban Unzoned
- Unincorporated County TAZs which meet infill definition
- Unincorporated County TAZs which do not meet infill definition

Figure 5: County Unincorporated Areas with Infill Areas and Fire Hazard Severity Zones

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021

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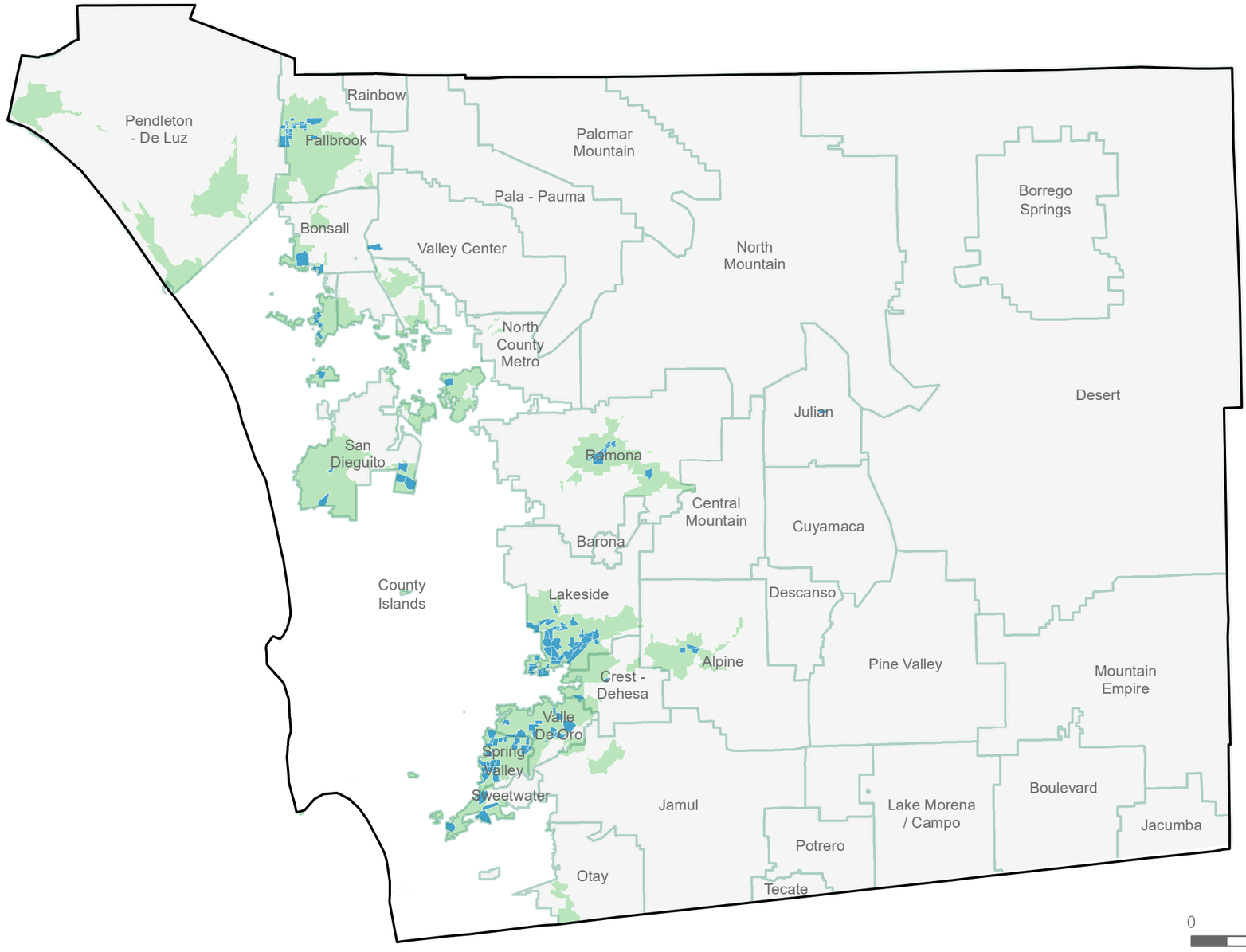

Legend

SANDAG Region | Community Plan Area | Unincorporated County TAZs which meet infill definition | Urbanized Areas

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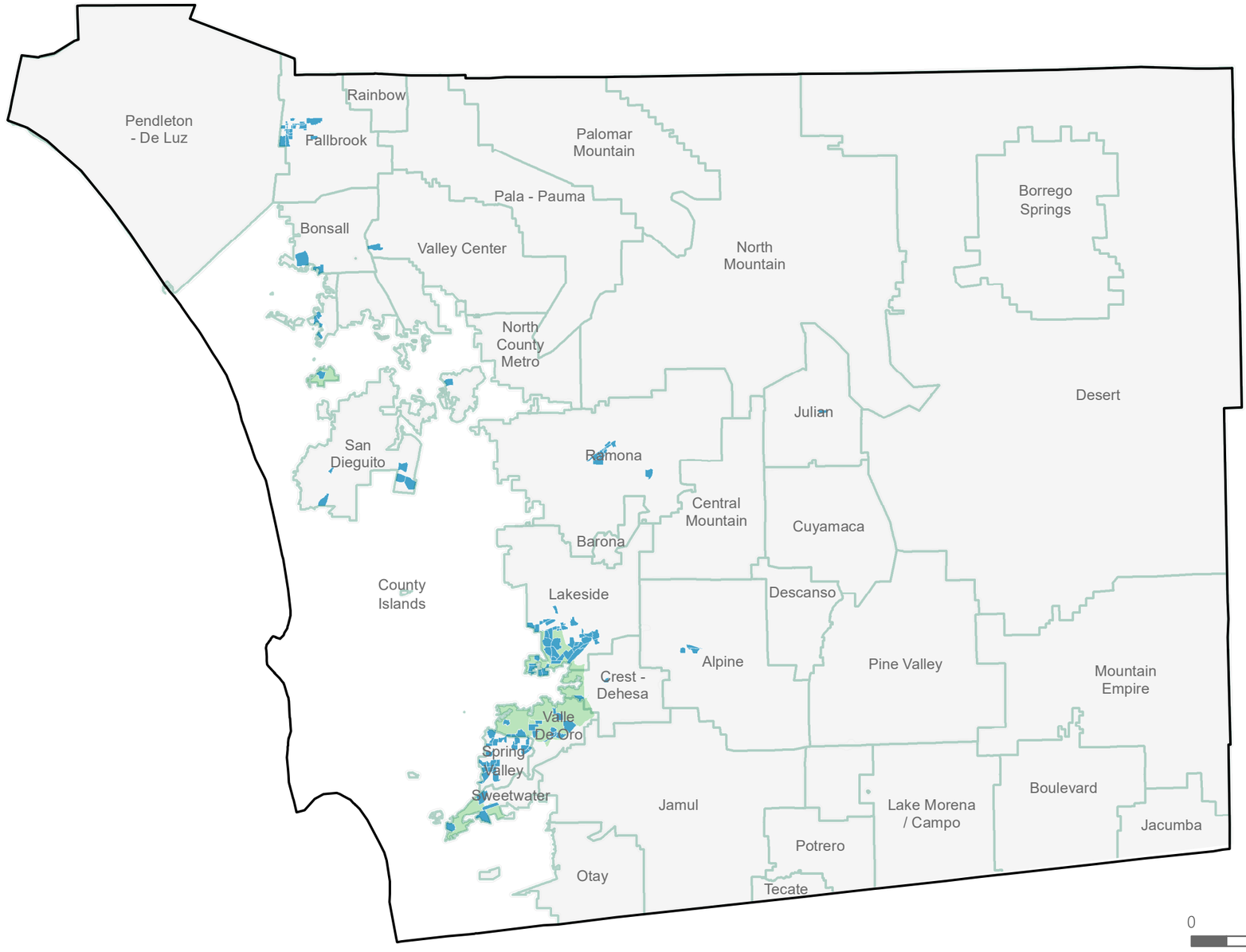
Figure 6: Unincorporated County Infill Areas and SB 9 Urbanized Areas (UAs)

*Based on the SANDAG Series 13 Base Year Model

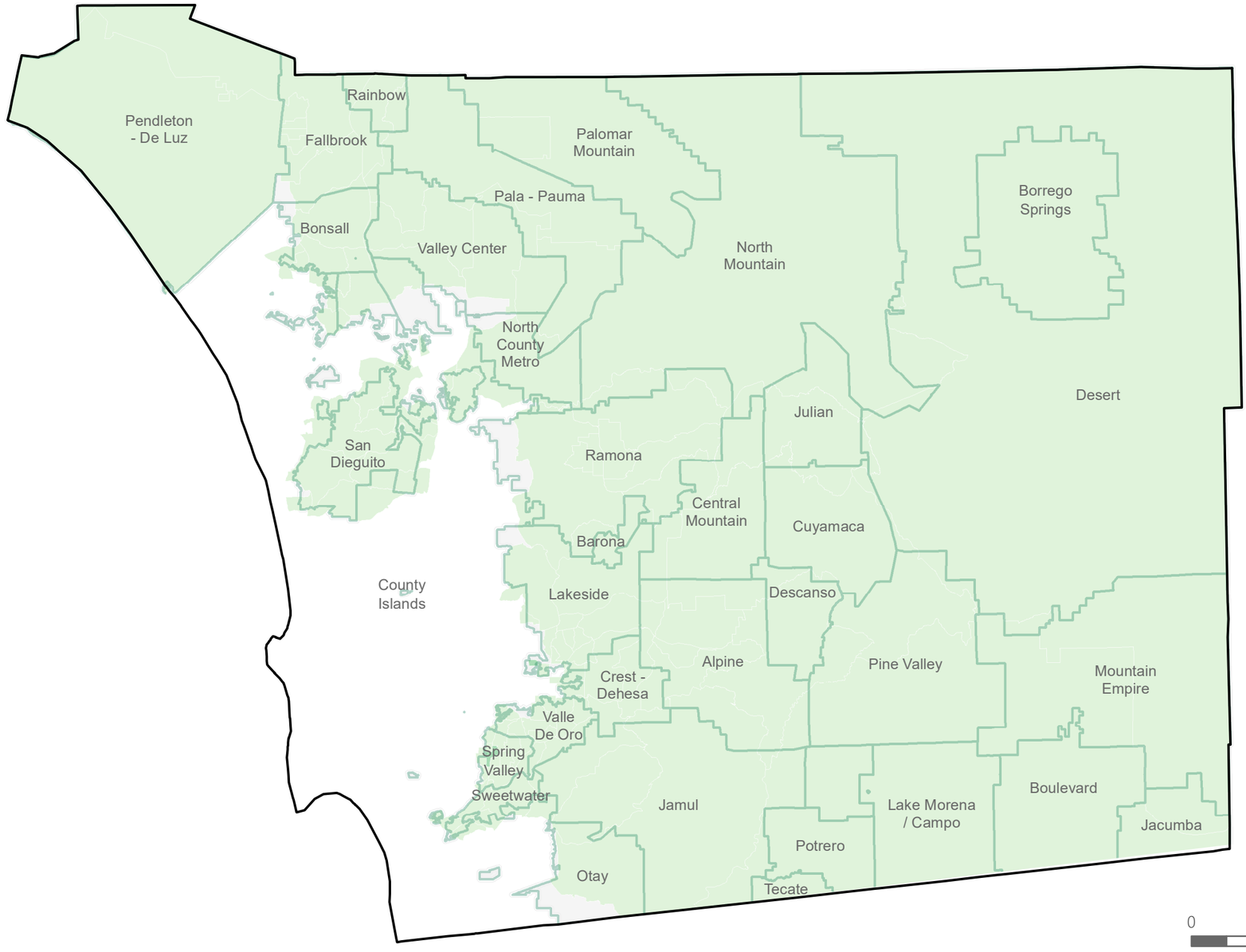


Legend

SANDAG Region | Community Plan Area | Unincorporated County TAZs which meet infill definition | SB 330 Affected CDPs

Figure 7: Unincorporated County Infill Areas and SB 330 Affected Census-Designated Places (CDP)

*Based on the SANDAG Series 13 Base Year Model



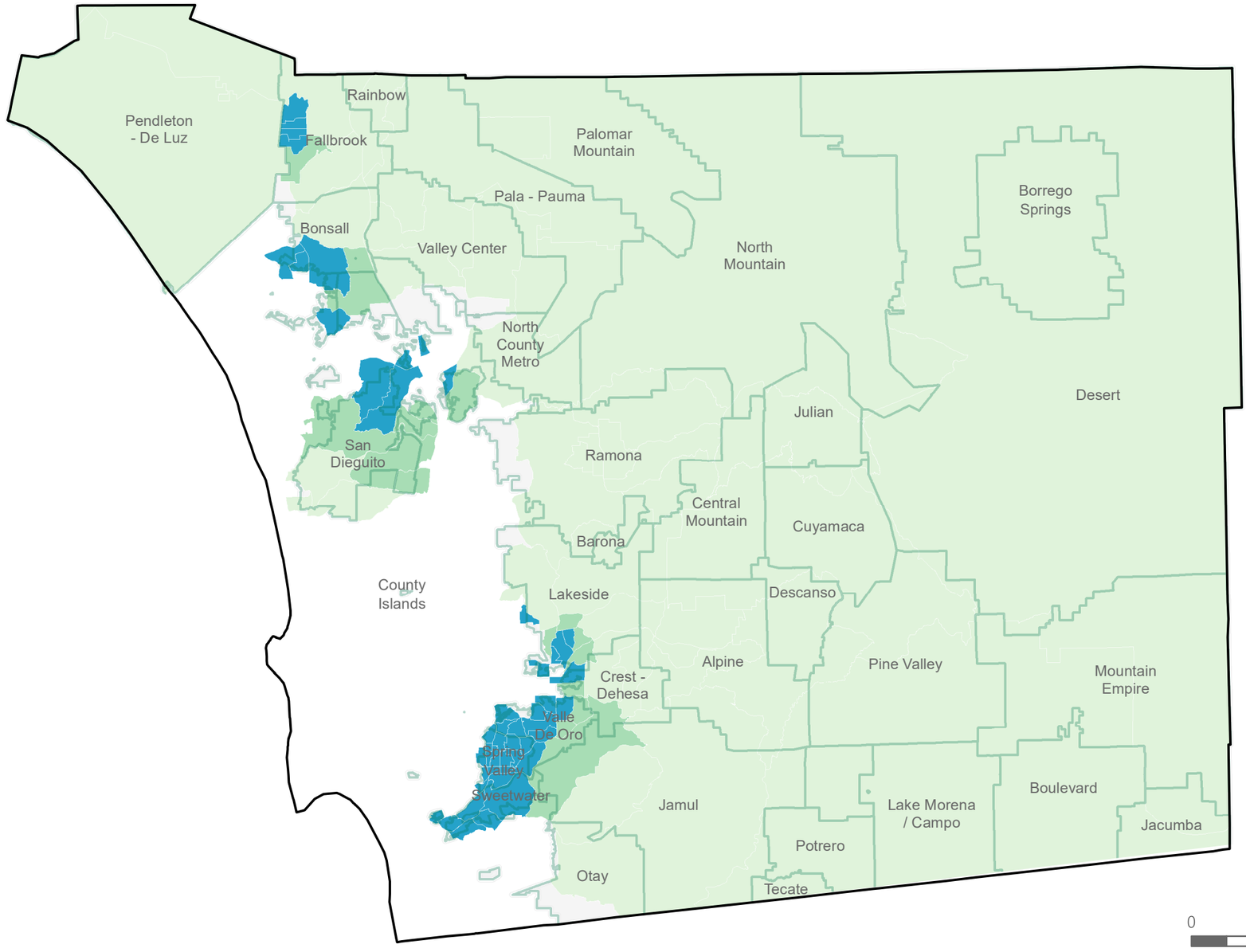
Legend

- SANDAG Region
- Community Plan Area
- At Least 15% below SANDAG Average VMT
- Between 15% below and SANDAG Average VMT
- Above SANDAG VMT

Figure 8: VMT per Capita by Census Tract, Categorized by SANDAG Average VMT per Resident (21.85)

*Based on the SANDAG Series 13 Base Year Model, consistent with Rescinded Transportation Study Guidelines

Draft



Legend

- SANDAG Region
- Community Plan Area
- At Least 15% below County Unincorporated Average VMT
- Between 15% below and County Unincorporated Average VMT
- Above County Unincorporated Average VMT

Figure 9: VMT per Capita by Census Tract, Categorized by Unicorporated County Average VMT per Resident (32.54)

*Based on the SANDAG Series 13 Base Year Model, consistent with Rescinded Transportation Study Guidelines

October 20, 2021

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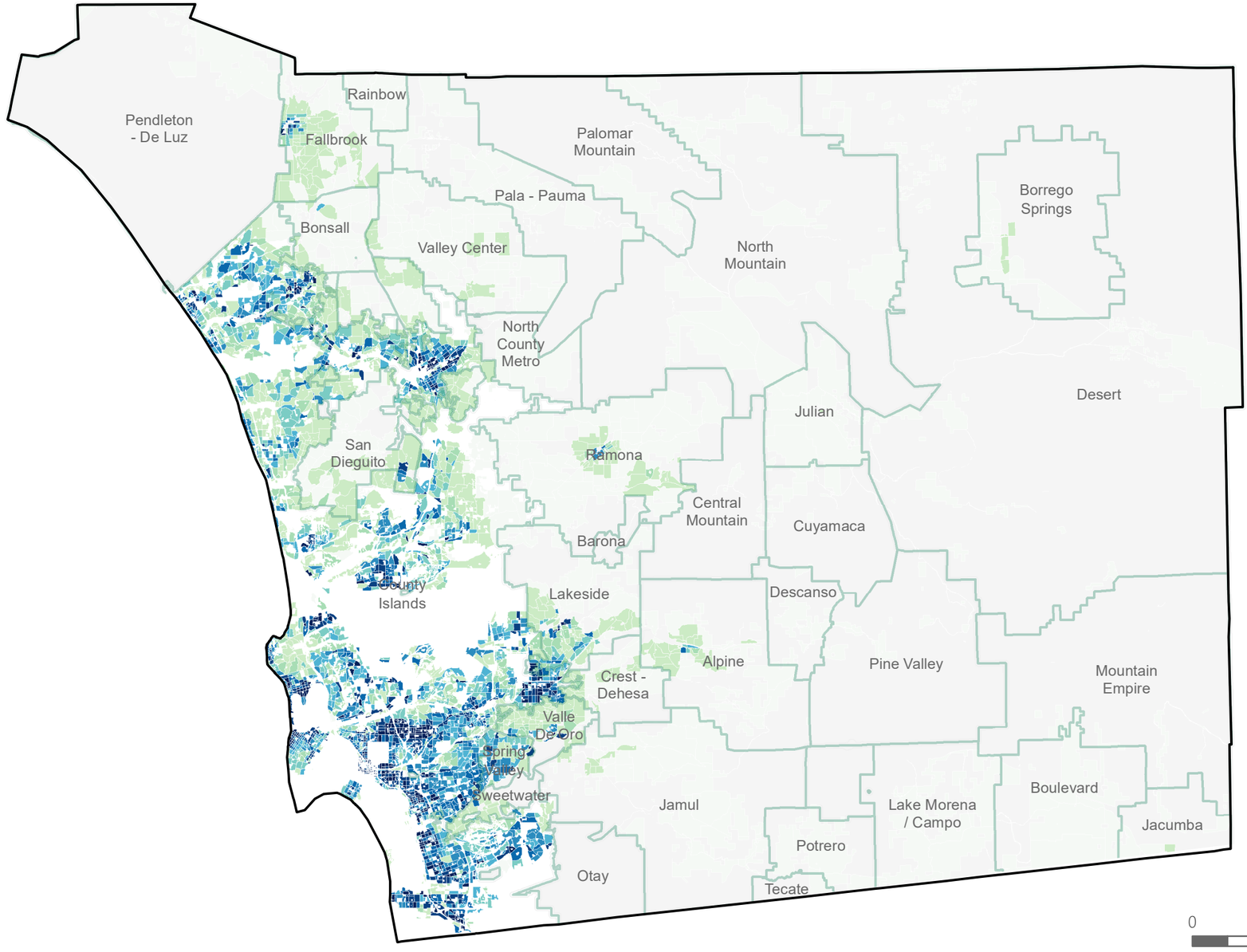
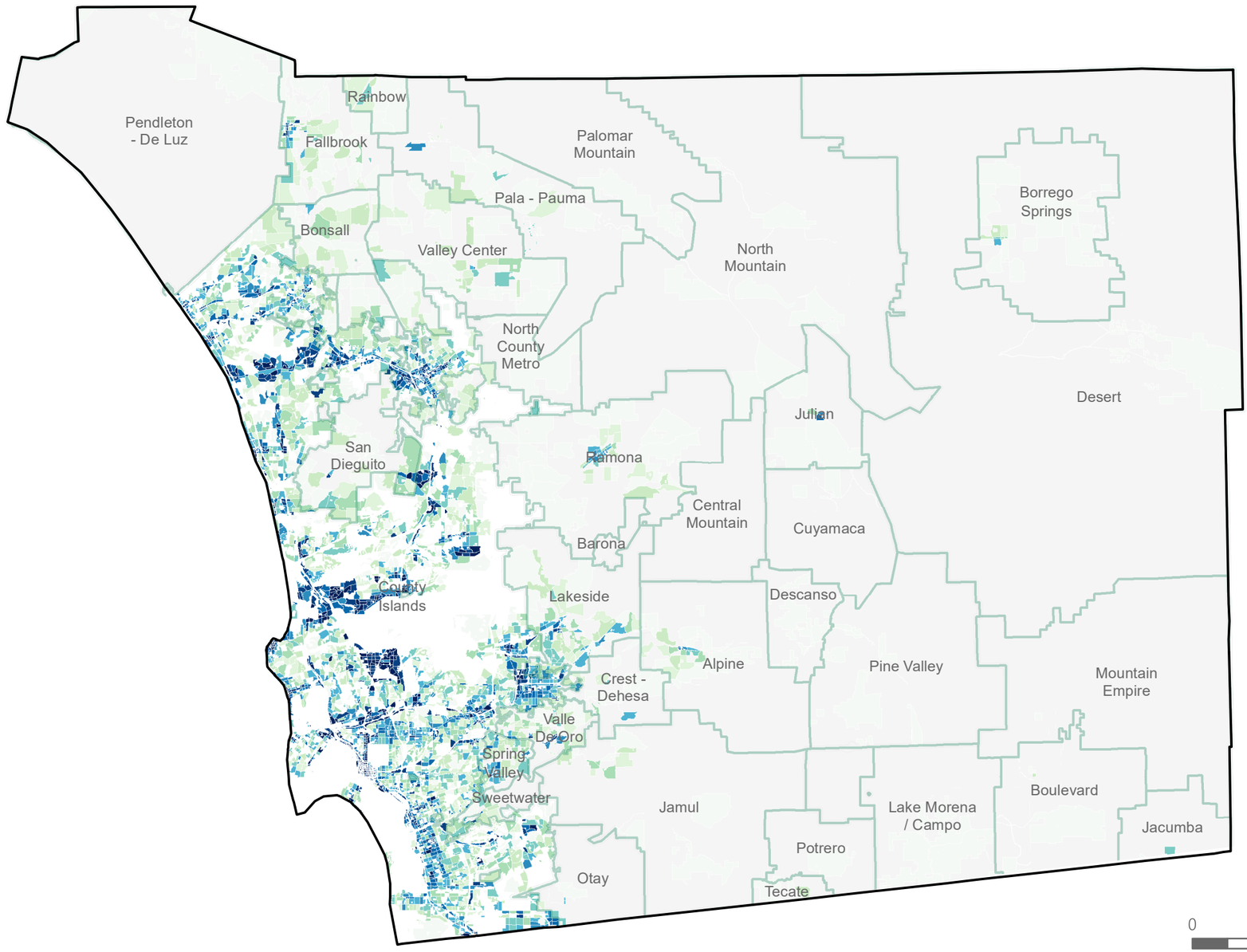


Legend

- SANDAG Region
- Community Plan Area
- Density (Population/Square Mile)
  - Less than 470
  - 470 - 1610
  - 1610 - 2890
  - 2890 - 4350
  - 4350 - 5710
  - 5710 - 7130
  - 7130 - 9060
  - 9060 - 12100
  - 12100 - 17500
  - Greater than 17500

Figure 10: Population Density in San Diego County

*Based on the SANDAG Series 13 Base Year Model



Legend

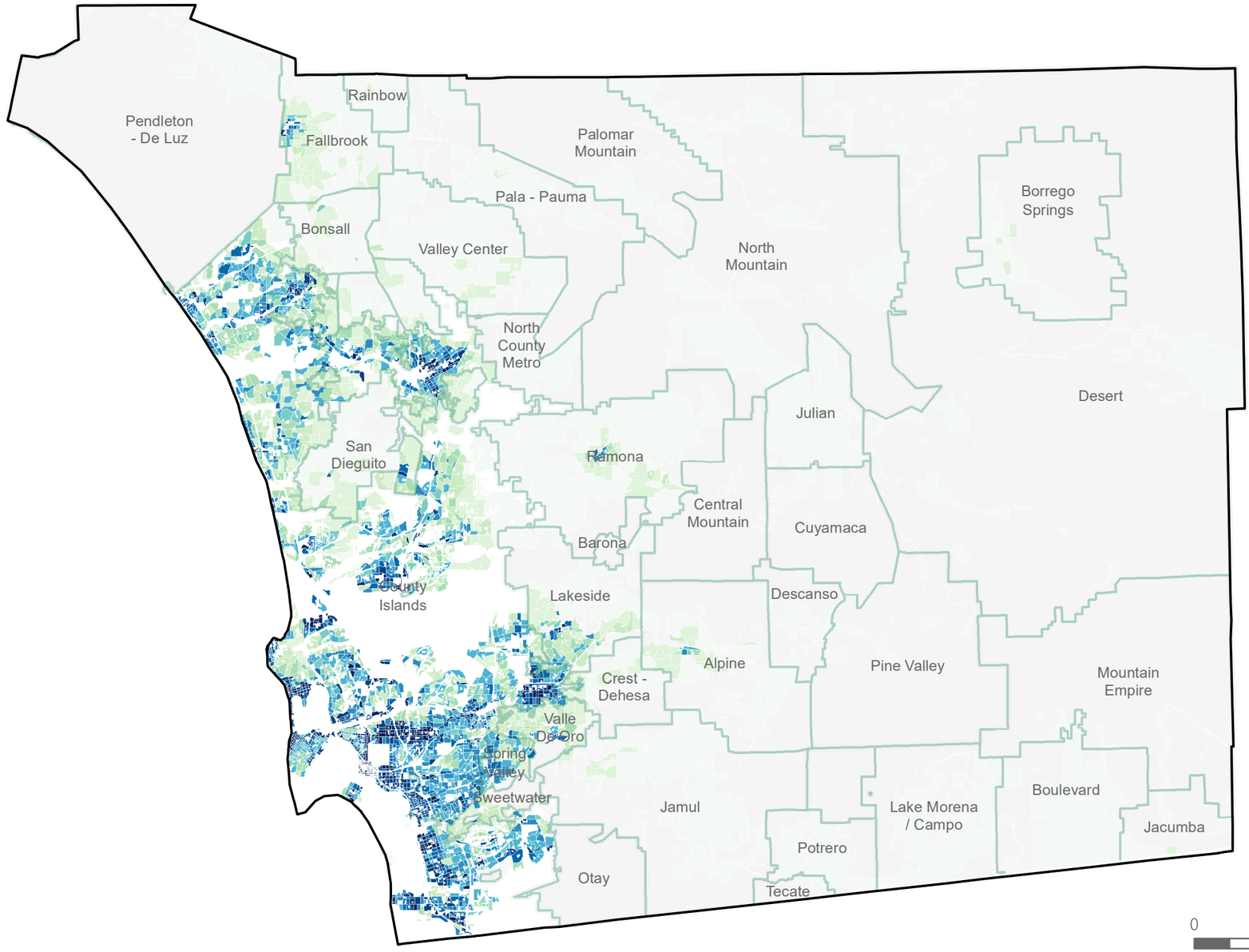
- SANDAG Region
- Community Plan Area

Density (Employees/Square Mile)

- Less than 50
- 50 - 100
- 100 - 210
- 210 - 460
- 460 - 950
- 950 - 1890
- 1890 - 3860
- 3860 - 7390
- 7390 - 14590
- Greater than 14590

Figure 11: Employment Density in San Diego County

*Based on the SANDAG Series 13 Base Year Model



Legend

- SANDAG Region
- Community Plan Area

Service Population Density (Service Population/Square Mile)

- Less than 570
- 570 - 2100
- 2100 - 3620
- 3620 - 5230
- 5230 - 6120
- 6120 - 8580
- 8580 - 11280
- 11280 - 15390
- 15390 - 22350
- Greater than 22350

Figure 12: Service Population Density in San Diego County

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021

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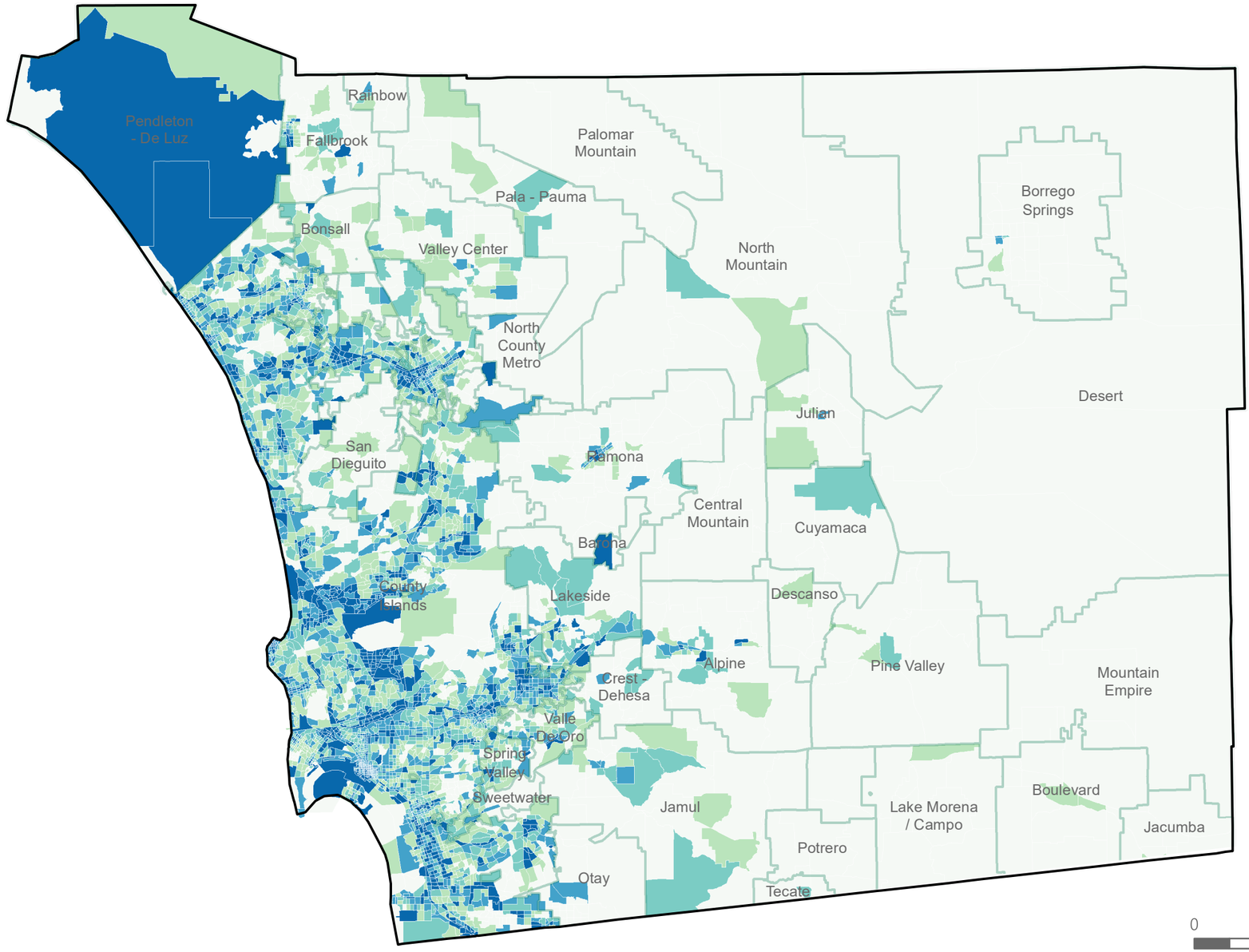


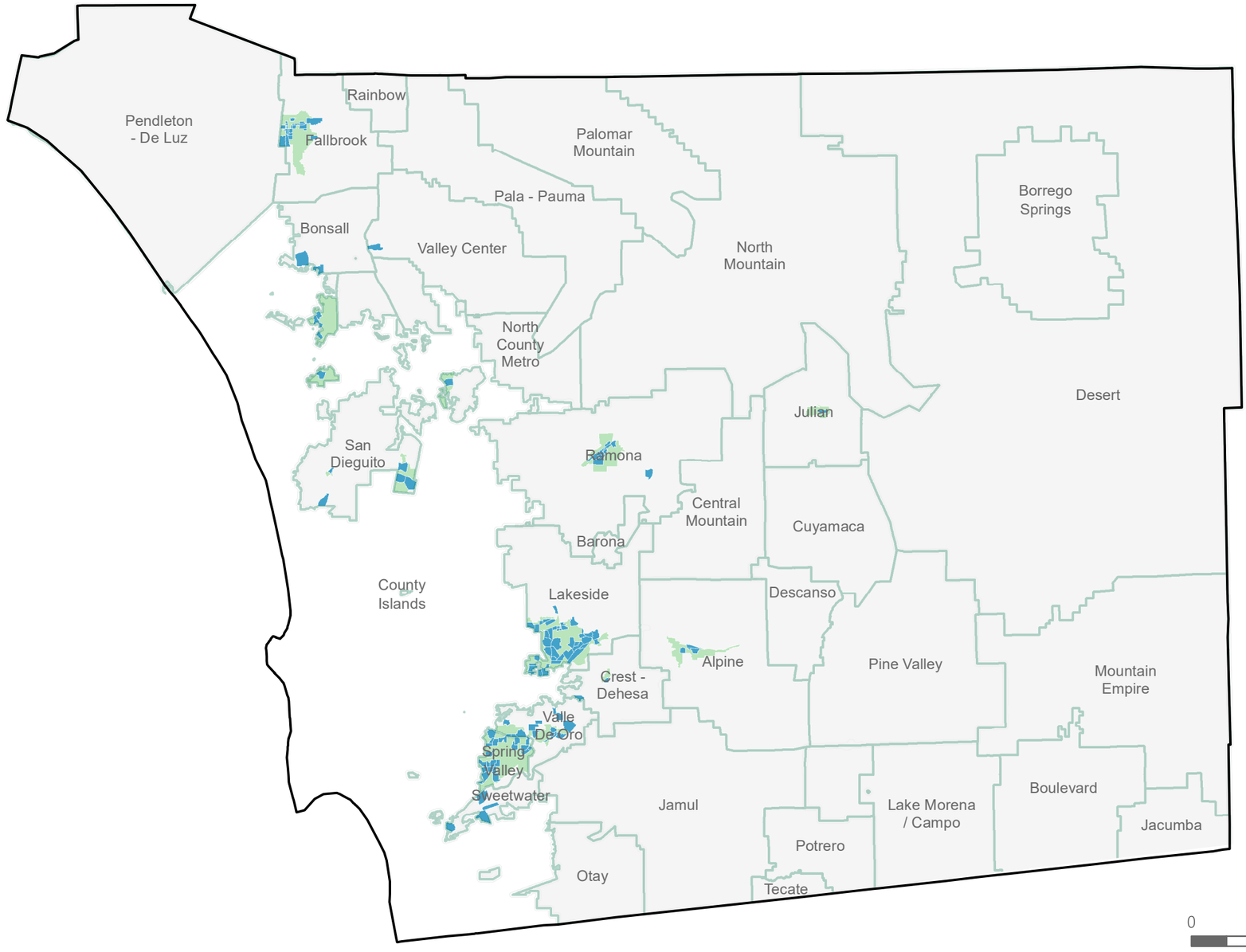
Legend

- SANDAG Region
- Community Plan Area
- Access to Retail and Restuarants within 1-mile, by TAZ
  - Less than 0.09
  - 0.10 - 0.59
  - 0.60 - 2.65
  - 2.66 - 16.35
  - Greater than 16.35

Figure 13: Retail and Restuarant Accessibility in San Diego County

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021

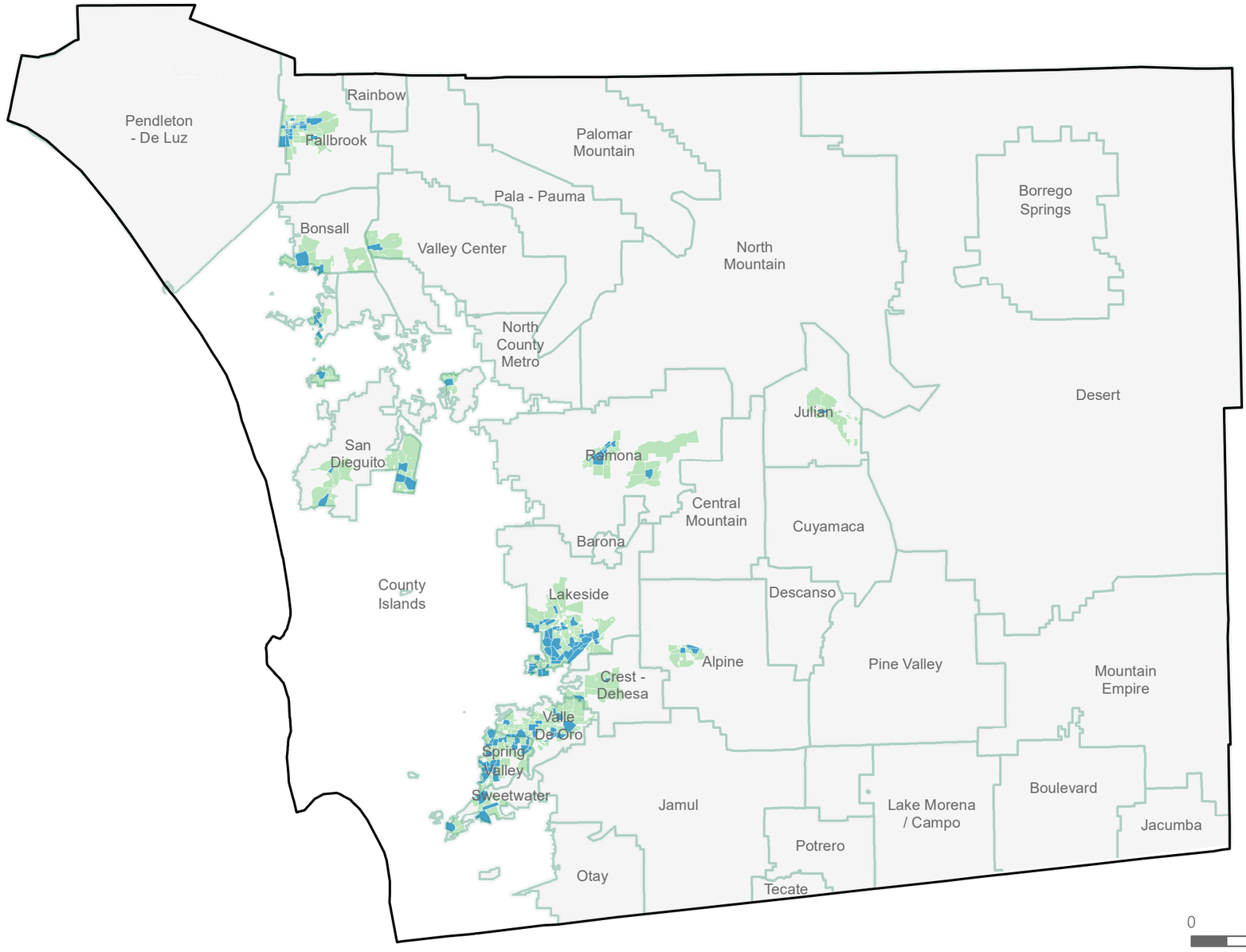


Legend

- SANDAG Region
- Community Plan Area
- Unincorporated County TAZs which meet infill definition
- County Village Areas that Overlap Infill Areas

Figure 14: County Village Areas that Overlap Infill Areas

*Based on the SANDAG Series 13 Base Year Model



Legend

- SANDAG Region
- Community Plan Area
- Unincorporated County TAZs which meet infill definition
- TAZs Adjacent to Infill Areas

Figure 15: Areas of Unincorporated County Which Meet Infill Definition and Adjacent TAZs

*Based on the SANDAG Series 13 Base Year Model

October 20, 2021

Appendix E: Project Types Grouped by Land Use Category

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
- Large Medical Centers
- 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
- Medical offices

4. Regional Public Facilities

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

- Airport
- 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
- Golf Course
- Aquarium

Appendix F: Transportation Projects That Do Not Require VMT Analysis

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 G: TDM Measures and VMT Reduction Calculation Methodology

Table G-1 summarizes the Project/Site level TDM measures that are identified within CAPCOA's GHG Handbook. As noted previously in Section 3.5, Plan/Community level TDM measures need to be implemented as a system and therefore are not applicable to individual development projects. The table outlines the areas in which individual measures can be applied (Urban, Suburban, and Rural) as well as if the measure can be applied to residential uses (VMT/Capita) employment uses (VMT/Employee), or both. The table also outlines the range of VMT reduction that may be associated with each measure. Finally, the measures highlighted in red have been deemed to not be applicable within the unincorporated portions of San Diego, with the reasoning cited under the notes column.

Table G-1 Summary of Project / Site TDM Measures

#	Name	Applicable Areas			Use Types		Range[1]	Notes
		Urban	Suburban	Rural	Residential	Employment		
T-1	Increase Residential Density	X	X		X		N/A	To avoid double counting, VMT reductions associated with this measure must be calculated via a SANDAG model run where the project land uses have been included within their respective TAZ.
T-2	Increase Job Density	X	X			X	N/A	To avoid double counting, VMT reductions associated with this measure must be calculated via a SANDAG model run where the project land uses have been included within their respective TAZ.
T-3	Provide Transit-Oriented Development	X	X	X	X	X	N/A	Infill areas within Transit Opportunity Areas (TOA) are screened out from conducting a VMT impact analysis. See Appendix D.
T-4	Integrate Affordable and Below Market Rate Housing	X	X		X		0.0%-22.4%	Reductions are based on local counts, see Appendix E.
T-5	Implement Commute Trip Reduction Program (Voluntary)	X	X			X	0.0%-4.0%	Must register and maintain reporting with SANDAG's iCommute Program.
T-6	Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)	X	X			X	0.0%-26.0%	Must register and maintain reporting with SANDAG's iCommute Program.
T-7	Implement Commute Trip Reduction Marketing	X	X			X	0.0%-4.0%	Cannot be implemented in addition to T-5 or T-6
T-8	Provide Ridesharing Program	X	X			X	0.0%-8.0%	Must register and maintain reporting with SANDAG's iCommute Program.
T-9	Implement Subsidized or Discounted Transit Program	X	X		X	X	N/A	Infill areas within TOAs are screened out from conducting a VMT impact analysis. See Appendix D. Areas outside of TOAs would not have sufficient transit access to qualify for this measure.
T-10	Provide End-of-Trip Bicycle Facilities	X	X		X	X	0.1%-0.6%	Project site must be accessed by a Class II bicycle facility or protected bicycle facility.

#	Name	Applicable Areas			Use Types		Range[1]	Notes
		Urban	Suburban	Rural	Residential	Employment		
T-11	Provide Employer-Sponsored Vanpool	X	X	X		X	1.45%	Must register and maintain reporting with SANDAG's iCommute Program.
T-12	Price Workplace Parking	X	X			X	N/A	Only feasible when transit services are present. Infill areas within Transit Opportunity Areas are screened out from conducting a VMT impact analysis. See Appendix D.
T-13	Implement Employee Parking Cash-Out	X	X			X	N/A	Only feasible when on-street parking in the surrounding neighborhood is either permitted to metered. The County of San Diego does not meter or permit on-street parking. Therefore, this measure is not feasible.
T-14	Provide Electric Vehicle Charging Infrastructure	X	X	X	X	X	N/A	Only applicable to GHG reduction, no effect on VMT reduction.
T-15	Limit Residential Parking Supply	X	X		X		N/A	Projects must be consistent with the County's parking requirements.
T-16	Unbundle Residential Parking Costs from Property Cost	X	X		X		N/A	Only feasible when transit services are present. Infill areas within Transit Opportunity Areas are screened out from conducting a VMT impact analysis. See Appendix D

Note:
[1] Ranges have been calibrated to San Diego County; therefore, they do not match those provided in the CAPCOA GHG Handbook.

VMT Reduction Calculation Methodology

T-4: Integrate Affordable and Below Market Rate Housing

This measure is allowable within all areas of the unincorporated county.

$$VMT\ Adjustment = \frac{(7.32 \times Total\ Units) - (1.64 \times Affordable\ Units)}{7.32 \times Total\ Units} - 1$$

Total Units = Total residential units to be constructed by the project.
Affordable Units = Total affordable units to be constructed by the project, as defined by section 50052.5 of the California Health and Safety Code.

Note: This calculation is based on an affordable housing trip generation counts conducted within the County of San Diego (See Appendix E). Therefore, these calculations are different than those outlined in the CAPCOA GHG Handbook.

Background: See Appendix E - *Affordable Housing and SB 743 VMT – Screening Considerations, Fehr & Peers, November 2021*

T-5: Implement Commute Trip Reduction Program (Voluntary)
This measure is only allowable in areas with Village or Semi-Rural zoning and can only be applied to non-residential uses.

Program must include the following elements to apply the VMT reductions:

- Employer-provided services, infrastructure, and incentives for alternative modes such as ridesharing (Measure T-8), bicycling (Measure T-10), vanpool (Measure T-11), and guaranteed ride home.
- Information, coordination, and marketing for said services, infrastructure, and incentives (Measure T-7).
- Project must register for, and provide annual monitoring reports to, SANDAG's iCommute program.

$$VMT\ Adjustment = \%\ Eligible \times -4\%$$

% Eligible = Total number of employees eligible to participate in the program.

Background: *https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-5.pdf*

T-6: Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)
This measure is only allowable in areas with Village or Semi-Rural zoning and can only be applied to non-residential uses.

This program must include all other elements (i.e., Measures T-7 through T-11) described for the voluntary program (Measure T-5) plus include mandatory trip reduction requirements (including penalties for non-compliance) and regular monitoring and reporting to ensure the calculated VMT reduction matches the observed VMT reduction. The project also must register for, and provide annual reports to, SANDAG's iCommute program.

$$VMT\ Adjustment = \%\ Eligible \times -26\%$$

% Eligible = Total number of employees eligible to participate in the program.

Background: *https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-6.pdf*

T-7: Implement Commute Trip Reduction Marketing
This measure is only allowable in areas with Village or Semi-Rural zoning and can only be applied to non-residential uses. If this measure is selected, the user may not also take credit for either Measure T-5 or T-6. However, this measure may be implemented alongside Measures T-8 through T-11.

The following features (or similar alternatives) of the marketing strategy are required.

- Onsite or online commuter information services.
- Employee transportation coordinators.
- Guaranteed ride home service.

To use the measure the project must register for, and provide annual reports to, SANDAG's iCommute program.

$$VMT\ Adjustment = \%\ Eligible \times -4\%$$

% Eligible = Total number of employees eligible to participate in the program.

Background: *https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-7.pdf*

T-8: Provide Ridesharing Program

This measure is only allowable in areas with Village or Semi-Rural zoning and can only be applied to non-residential uses. To use the measure the project must register for, and provide annual reports to, SANDAG's iCommute program.

$$VMT\ Adjustment = \%\ Eligible \times -4\%$$

% Eligible = Total number of employees eligible to participate in the program.

Background: *https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-8.pdf*

T-10: Provide End-of-Trip Bicycle Facilities

This measure is only allowable in areas with Village or Semi-Rural zoning and can only be applied to non-residential uses. This measure will install and maintain end-of-trip bicycle facilities for employee use, including bike parking, bike lockers, showers, and personal lockers. The project site must be accessed by a Class II Bicycle Lanes or greater.

If the project provides bike parking, showers, and lockers:

$$VMT\ Adjustment = -0.6\%$$

If the project provides bike parking, showers, and lockers:

$$VMT\ Adjustment = -0.1\%$$

Background: *https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-10.pdf*

T-11: Provide Employer-Sponsored Vanpool

This measure is allowable within all areas of the County, but can only be applied to non-residential units. To use the measure the project must register for, and provide annual reports to, SANDAG's iCommute program.

$$VMT\ Adjustment = -1.45\%$$

Background: *https://www.caleemod.com/documents/handbook/ch_3_transportation/measure_t-11.pdf*

Appendix H: Justification/Rationale for Screening Criteria and Thresholds

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 Region, which includes the entire San Diego 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.

OPR updated the FAQ on their website to clarify "regional" as referring to the full geography within the jurisdictional borders of a metropolitan planning organization (MPO) or a regional transportation planning agency (RTPA). Therefore, analysis of VMT in the unincorporated County must include the entire SANDAG area, which for San Diego County includes both the unincorporated area, and incorporated cities.

2. Infill Areas & Infill Area + Villages that are within Transit Opportunity Areas (TOAs)

SB 743 includes the following two legislative intent statements:

- 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.

- 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.

Additionally, California Government Code – GOV § 65088.4(C) states the following:

- The city or county may designate an infill opportunity zone by adopting a resolution after determining that the infill opportunity zone is consistent with the general plan and any applicable specific plan, and is a transit priority area within a sustainable communities strategy or alternative planning strategy adopted by the applicable metropolitan planning organization.

Therefore, pairing the identified Infill Areas with the Transit Opportunity Areas will satisfy this requirement of the California Government Code.

Justification – The switch from direct traffic impacts to a VMT analysis under CEQA was adopted purposefully by the State Legislature to promote infill development. Accordingly, development located in infill areas would not be VMT significant under CEQA. The following describes how infill areas within the unincorporated county were identified and where projects can be screened from VMT analysis.

The analysis to develop an infill definition and criteria was based on the socioeconomic data from the San Diego Association of Governments (SANDAG) Activity-Based Model (ABM2+) Series 14. The socioeconomic data is provided by traffic analysis zone (TAZ). The core concept of the three 'Ds' and factors provides a framework for selecting appropriate variables and setting thresholds based on the literature. The following data was compiled into maps and evaluated as part of the process to define infill:

- Population density
- Housing density
- Employment density
- Intersection density
- Access to jobs within a 15-mile radius
- Access to shopping/restaurants within a one-mile radius

Housing density, Intersection density, and Access to Jobs were identified as the largest predictor for "infill" for the unincorporated county.

Using the chosen key variables/analysis to define urban places provides a representation of urban areas in the unincorporated county. These variables provide the foundation for defining infill locations within the unincorporated county.

This analysis is further detailed in Appendix H Technical Memorandum Infill Areas.

TOAs represent areas that will likely be provided transit service within the unincorporated county based on both existing and future land uses patterns identified within the County's General Plan and SANDAG's Regional Transportation Plan. Mobility Hubs.

A key component to successful transit service is to provide a connection between areas with high densities both in population and employment. When transit services can efficiently connect one

higher density area to another, there is a higher propensity that travelers within those areas will have both their origin and destination along the provided transit line, thus, making the use of transit more viable. Additionally, areas with higher existing densities provide more opportunity for infill development, which is encouraged in and around Transit Priority Areas (TPAs), as outlined in SB-743.

As outlined in CEQA Guidelines Section 15064.3(b)(1), new development located within a half-mile of a major transit stop should be presumed to cause a less than significant transportation impact, regardless of if their anticipated VMT generation. Section 21064.3, of the CEQA Guidelines defines a major transit stop as a site containing any of the following: (a) An existing rail or bus rapid transit station. (b) A ferry terminal served by either a bus or rail transit service. (c) 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. These areas have been defined as Transit Priority Areas (TPA) by the OPR Technical Advisory.

Additional information on TOAs is detailed in Appendix H Technical Memorandum - Potential Transit Expansion within the County of San Diego.

3. Small Projects

Projects generating less than 110 daily vehicle trips (trips are based on the number of vehicle trips calculated using appropriate trip generation rates with any alternative modes/location-based adjustments are applied) may be presumed to have a less than significant transportation impactunder 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.

4. 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.

5. 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 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

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[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.

6. 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.

7. 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.

8. 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 Regional 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 entire San Diego County region, including the incorporated cities.

2. Employment (Office/Commercial/Industrial)

Threshold – Fifteen percent below Regional 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 Regional 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 Regional 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 County regional average VMT per Resident and Employee for 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. Using 15 percent below the Regional average as the threshold holds mixed use projects to the same expectation of VMT efficiency.

5. Regional Recreational

Threshold – A net increase in total regional VMT

Justification – The threshold for regional recreational projects within the County is consistent with the OPR Technical Advisory (applying the recommendations for regional retail uses)

6. Regional Public Facilities

Threshold – A net increase in total regional VMT

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.

7. Infill Areas & Infill + Village Areas

Threshold – Defined Infill Areas and Infill Areas that are within Transit Opportunity Areas (TOAs)

Justification – The analysis to develop an infill definition and criteria was based on the socioeconomic data from the San Diego Association of Governments (SANDAG) Activity-Based Model (ABM) Series 13. The socioeconomic data is provided by traffic analysis zone (TAZ). The core concept of the three 'Ds' and factors provides a framework for selecting appropriate variables and setting thresholds based on the literature. The following data was compiled into maps and evaluated as part of the process to define infill:

- Population density
- Housing density
- Employment density
- Intersection density
- Access to jobs within a 15-mile radius
- Access to shopping/restaurants within a one-mile radius

Housing density, Intersection density, and Access to Jobs were identified as the largest predictor for "infill" for the unincorporated county.

Using the chosen key variables/analysis to define urban places provides a representation of urban areas in the unincorporated county. These variables provide the foundation for defining infill locations within the unincorporated county.

This analysis is further detailed in Appendix H Technical Memorandum Infill Areas.

A key component to successful transit service is to provide a connection between areas with high densities both in population and employment. When transit services can efficiently connect one higher density area to another, there is a higher propensity that travelers within those areas will have both their origin and destination along the provided transit line, thus, making the use of transit more viable. Additionally, areas with higher existing densities provide more opportunity for infill development, which is encouraged in and around Transit Priority Areas (TPAs), as outlined in SB-743.

As outlined in CEQA Guidelines Section 15064.3(b)(1), new development located within a half-mile of a major transit stop should be presumed to cause a less than significant transportation impact, regardless of if their anticipated VMT generation. Section 21064.3, of the CEQA Guidelines defines a major transit stop as a site containing any of the following: (a) An existing rail or bus rapid transit station. (b) A ferry terminal served by either a bus or rail transit service. (c) 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. These areas have been defined as Transit Priority Areas (TPA) by the OPR Technical Advisory.

Final County of San Diego Transportation Study Guidelines

Appendix I: Technical Memorandum on Transit Opportunity Areas

MEMORANDUM

To: Jacob Armstrong and Damon Davis; County of San Diego
From: Stephen Cook, TE, Intersecting Metrics
Date: November 9, 2021
Regarding: Potential Transit Expansion within the County of San Diego

The purpose of this memo is to identify potential opportunities in which high-frequency regional transit routes can be further expanded into the unincorporated portions of San Diego County (Unincorporated County). This memo was completed in conjunction and builds on the County of San Diego's Staff Comments and Recommendations Regarding the Proposed San Diego Forward: Draft 2021 Regional Plan.

1.0 Background

Regional transit services within the Unincorporated County are currently limited to a single Sprinter[1] Station (Buena Creek) and a limited number of low frequency rural bus routes. With the implementation of California Senate Bill 743 (SB-743) the California Environmental Quality Act (CEQA) guidelines were revised to strongly encourage the use of vehicle miles traveled (VMT) as the metric in which transportation related impacts are determined. This presents a significant challenge for the Unincorporated County since it is predominantly comprised of lower density suburban and rural[2] communities, not served by transit, which is not ideal for efficient VMT production. As a result, the majority of the Unincorporated County generates VMT at a higher rate than what is prescribed under CEQA. As such, the County of San Diego Planning and Development Services Department (County) is currently looking for opportunities to further expand transit within the Unincorporated County to help alleviate VMT related impacts and allow for higher density infill development within key locations around the potentially expanded transit services.

The following sections provide background on SB-743, the effect that it has had on the Unincorporated County, its relationship to regional transit services, and the direction in which the County of San Diego Board of Supervisors (Board) provided County staff in regard to exploring regional transit opportunities within the Unincorporated County to potentially reduce VMT related impacts.

1.1 SB-743

On September 27, 2013, Governor Edmund G. Brown, Jr. signed SB-743 into law, starting a process that is expected to fundamentally change the way transportation impact analysis is conducted under CEQA. Within the State's CEQA Guidelines, these changes included elimination of auto delay, level of service (LOS), and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts.

On December 2018, the Resources Agency certified and adopted the CEQA Guidelines update package, which included the California Natural Resources Agency Guidelines for the Implementation of

[1] The San Diego Sprinter Line is a light-rail line operated by the North County Transit District (NCTD) along the SR-76 corridor in the norther portion of San Diego County.
[2] See Attachment 1 for definition of urban, suburban, and rural areas.

the California Environmental Quality Act. As part of this package the CEQA Guidelines were updated to include the new impact standards and criteria for transportation related impacts, as outlined below:

> *CEQA Guidelines Section 15064.3(b)(1):* 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.

1.2 OPR Technical Advisory

As a result, the California Governor's Office of Planning and Research (OPR) updated and released the *Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory)*[3] *in December 2018*. The Technical Advisory provides guidance and recommendations on how jurisdictions can update their transportation guidelines to be consistent with SB-743 and the updated CEQA guidelines. The Technical Advisory also provides substantial evidence for recommended VMT based significance thresholds, in which jurisdictions can adopt, or project applicants can use in cases where jurisdictional specific standards are not provided.

The recommended VMT impact thresholds provided within OPR's Technical Advisory are as follows:

- *Residential Projects:* Projects that generate a VMT per Capita at or below 85% of the regional mean have a less than significant impact.
- *Commercial Office Project:* Projects that generate a VMT per Employee at or below 85% of the regional mean have a less than significant impact.
- *Commercial Retail:* Projects that would result in no net increase in VMT within the region have a less than significant impact.
- *Transportation Projects* – Projects that do not induce additional vehicular travel have a less than significant impact.

The County does not currently have adopted VMT significance thresholds. Therefore, they currently utilize the standards, thresholds, and methodologies outlined in the OPR Technical Advisory for guidance in identifying VMT related impacts within the Unincorporated County.

1.3 Transit Priority Areas

As outlined in CEQA Guidelines Section 15064.3(b)(1), new development located within a half-mile of a major transit stop should be presumed to cause a less than significant transportation impact, regardless of if their anticipated VMT generation. Section 21064.3, of the CEQA Guidelines defines a major transit stop as a site containing any of the following: (a) An existing rail or bus rapid transit station. (b) A ferry terminal served by either a bus or rail transit service. (c) 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. These areas have been defined as Transit Priority Areas (TPA) by the OPR Technical Advisory.

The OPR Technical Advisory further notes that the presumption of a less than significant impact within TPAs would not apply 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

[3] OPR Technical Advisory: https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

- 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

This shows that TPAs can be a good tool to provide additional opportunities for infill or higher density development to occur within areas that would otherwise have VMT related impacts. However; as noted above, low density projects (FAR less than 0.75) or developments that provide excess parking within TPAs may still result in a significant impact. Therefore, development within TPAs should adhere to the criteria outlined within the OPR Technical Advisory.

1.4 Effect on the Unincorporated Portions of San Diego County

The VMT per Capita and VMT per Employee for different areas within the Unincorporated County are derived using the SANDAG Series 14 Transportation Forecast - Base Year 2016 Model. As per the OPR Technical Advisory, development within areas that are identified to generate a VMT per Capita or VMT per Employee at or below 85% of the regional mean are presumed to have as less than significant impact. Figure 1 displays the areas within the Unincorporated County that currently generate a VMT per Capita[4] at or below 85% of the regional mean (green) and the areas that generate above 85% (red). As shown in Figure 1, there are only a small number of areas within the Unincorporated County that generate a VMT per capita below the OPR thresholds. Additionally, there is only one existing TPA located within the Unincorporated County, at the Buena Creek Sprinter Station. This indicates that there are very few locations within the Unincorporated County in which future development can occur without resulting in a significant VMT related impact.

1.5 Board Direction

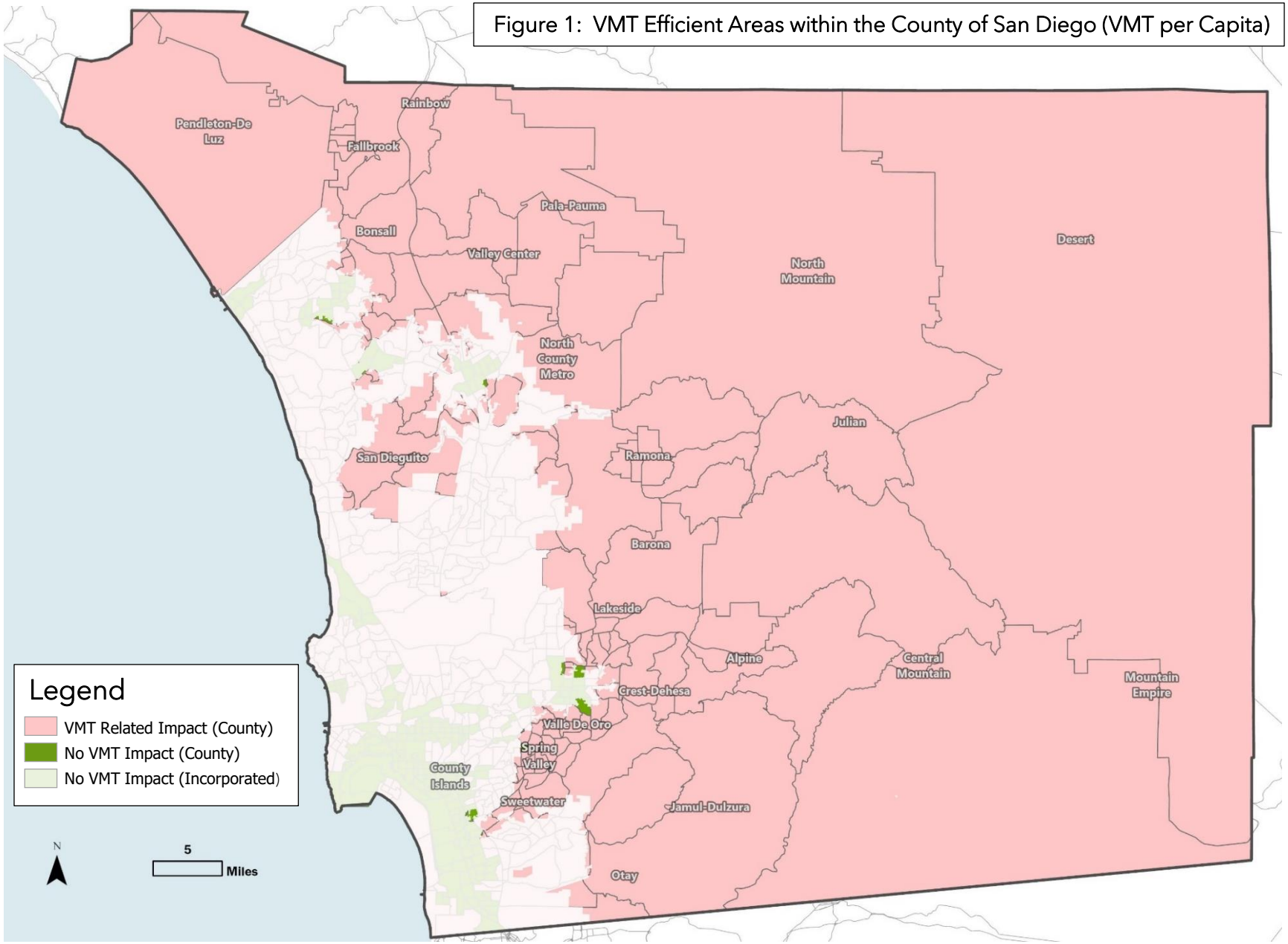
In an effort to expand the number of TPAs within the Unincorporated County and incentivize infill development in less impactful areas, the Board provided County staff the following direction at the May 19, 2020 hearing:

> Explore the potential creation of transit accessible areas and look at the intersection between VMT efficient areas or lower thresholds in accordance with the areas that do not require further analysis. Explore the potential transit corridors and look at the SANDAG Regional Transportation Plan, Metropolitan Transit System (MTS), North County Transit District (NCTD), and other possible areas and how that may impact VMT efficient areas or areas covered by the exemption.

As such, the remaining sections of this memo outline the available resources and associated opportunities to expand the region's transit services into the Unincorporated County.

[4] VMT per Employee generation can found through the following source: https://sandag.maps.arcgis.com/apps/webappviewer/index.html?id=5b4af92bc0dd4b7babbce21a7423402a

Figure 1: VMT Efficient Areas within the County of San Diego (VMT per Capita)



Source: SANDAG Series 14 Transportation Forecast – Base Yea 2016

2.0 San Diego Forward 2021 Regional Plan

The San Diego Forward is the Regional Transportation Plan (RTP) for the San Diego Region. The RTP sets the vision, plan, timing, and funding allocation for a region's transportation network. As the Metropolitan Planning Organization (MPO) for the San Diego Region, SANDAG is responsible for developing, publishing, and implementing the region's RTP. SANDAG released the initial Draft of the *San Diego Forward the 2021 Regional Plan (2021 Regional Plan)*[5], in May 2021. As such, the Draft 2021 Regional Plan was used as the primary resource to identify potential opportunities to expand future transit services within the Unincorporated County.

2.1 Transit Plan

High-frequency regional transit routes such as fixed rail, bus rapid transit (rapid bus), or express bus services are generally considered to be associated with high-quality transit corridors with major transit stops (as outlined in Section 1.2). Thus, these are the types of transit services that facilitate TPAs, and future development is encouraged to build around, as outlined in SB-743 and Section 21064.3 of the CEQA Guidelines. Figure 2 displays the planned regional transit network contained within the 2021 Regional Plan. As shown, there is currently a limited number high-frequency regional transit services planned within the Unincorporated County, thus limiting the number of opportunities to create future TPAs. A Next Gen Rapid[6] route is proposed to service the Spring Valley, Casa De Oro, Sweetwater, and Otay Community Planning Areas (CPAs); however, no other high-frequency regional transit services are proposed within the other portions of the Unincorporated County (outside of the exiting Buena Creek Sprinter Station).

The 2021 Regional Plan also identifies a series of Complete Corridors within the regional highway network where additional transit service and improvements are envisioned. Complete Corridors will be designed to give buses and other transit vehicles dedicated space on roadways that are currently identified to have excess vehicular capacity. Complete Corridors will also offer transit vehicles a traffic signal system that gives them priority over other traffic, thus reducing travel times and improving service. These improvements should provide the opportunity to implement additional future high-frequency regional transit services (Rapid bus or Express bus) within the Unincorporated County. Figure 3 displays the Complete Corridors that are planned within the 2021 Regional Plan. As shown in the figure, the I-15, I-8 and SR-125 corridors are all included within the regional Complete Corridor network. As such, the proposed Complete Corridors will have the ability to provide additional high-frequency regional transit services to the Bonsall, Fallbrook, North County Metro, and Lakeside CPAs.

2.2 Mobility Hubs

As outlined in the 2021 Regional Plan, Mobility Hubs are communities with a high concentration of people, destinations, and travel choices. Mobility Hubs can span one, two, or even a few miles based on community characteristics. Mobility Huns will be uniquely designed to fulfill a variety of travel needs while strengthening sense of place. A fully connected network of regional Mobility Hubs ensures seamless connections to major work, school, shopping, and leisure destinations using transit and Flexible Fleets. Infrastructure improvements associated with the regional transit network, Complete Corridors, and Mobility Hubs will ensure that Flexible Fleets have safe spaces to use streets and places to charge and park vehicles at key destinations. Based on these identified features Mobility Hubs are generally associated with the development that is encouraged within TPAs.

Figure 4 displays the proposed Mobility Hub locations within the region. As shown in the figure, there are proposed Mobility Hub locations that incorporate portions of the San Dieguito, North County Metro, Lakeside, and Otay CPAs.

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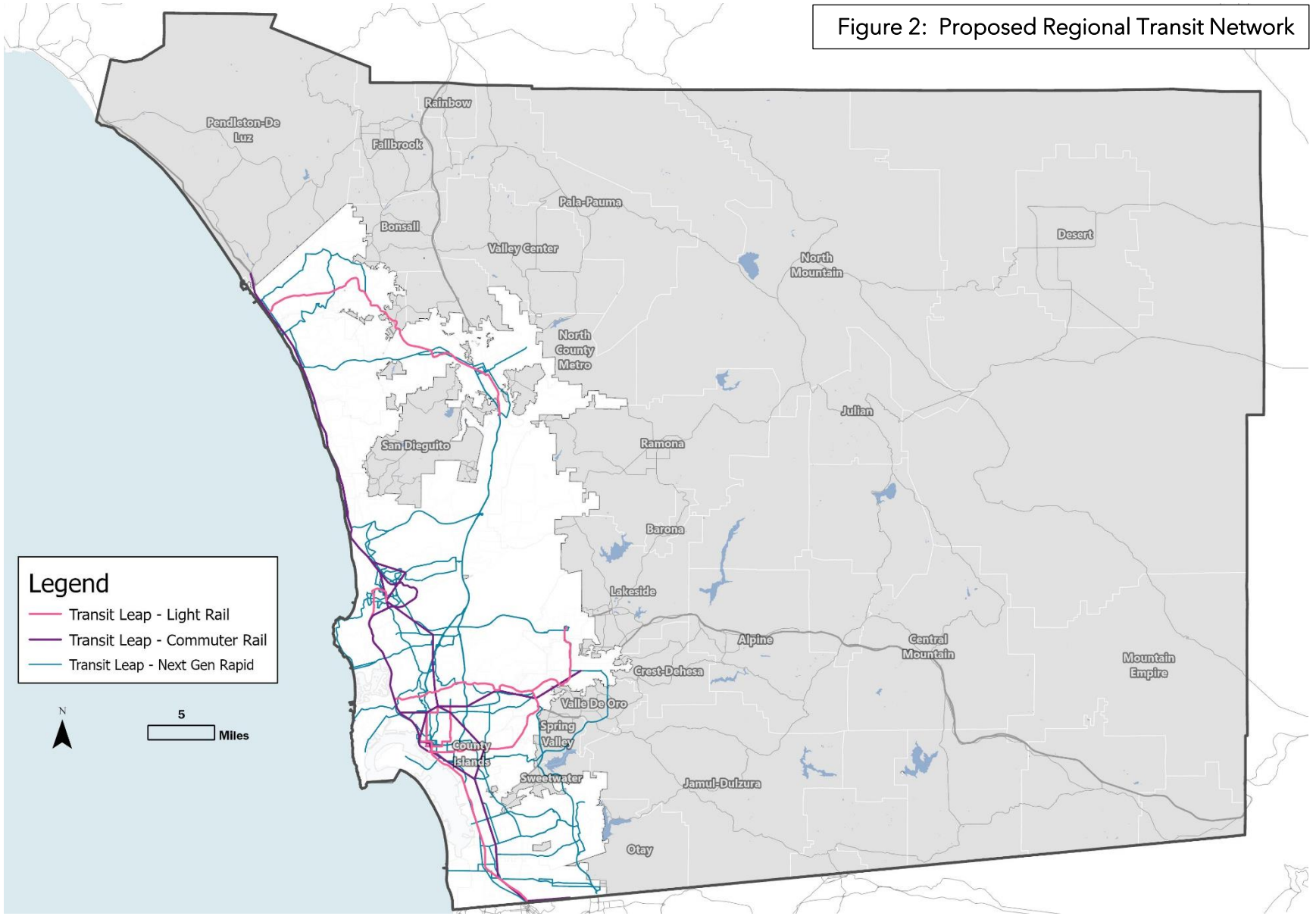
[5]Source: https://sdforward.com/mobility-planning/2021-regional-plan

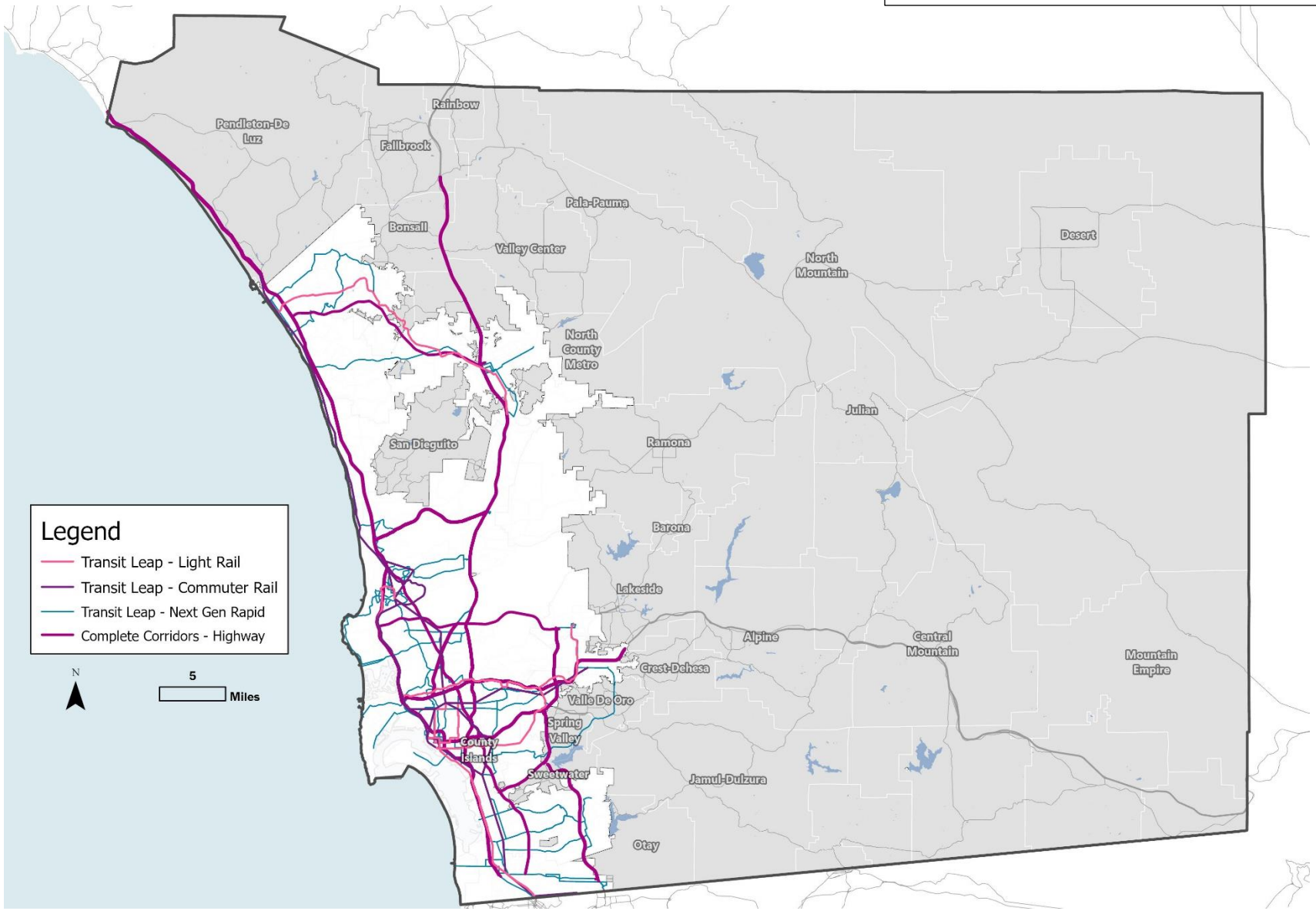
[6] The 2021 Regional Plan identifies Next Gen Rapid as faster and more reliable Rapid bus service with more comfortable, high-tech vehicles operating in priority lanes and making use of better signal technology. All day service would operate 20 hours per day.

Figure 2: Proposed Regional Transit Network



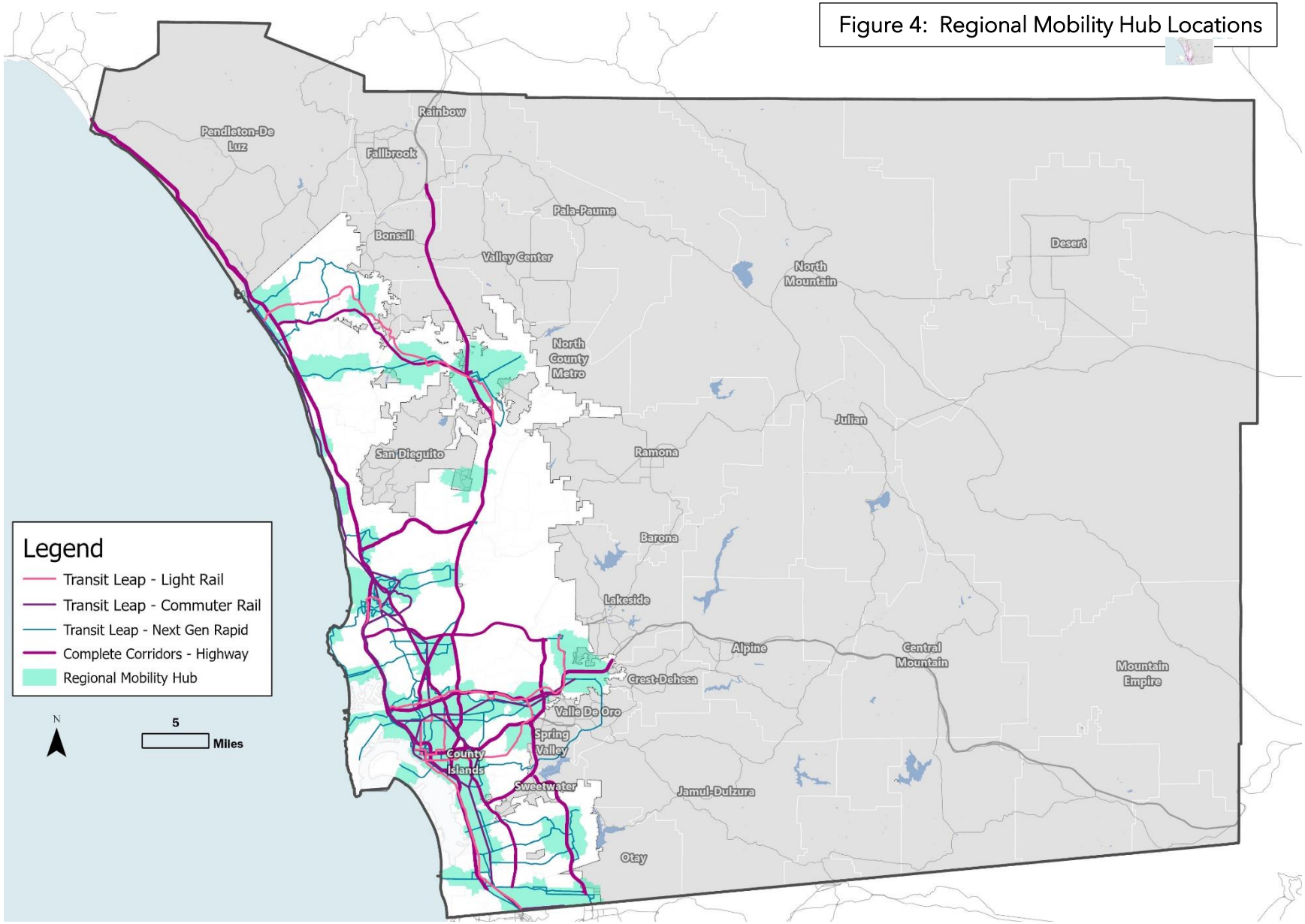
Source: San Diego Forward – 2021 Regional Plan

Figure 3: Proposed Complete Corridors



Source: San Diego Forward – 2021 Regional Plan

Figure 4: Regional Mobility Hub Locations



Source: San Diego Forward – 2021 Regional Plan

2.3 Implementation

The 2021 Regional Plan is intended to be implemented over the next 29 years (with a horizon year 2050). The funding and improvement schedules within the plan are broken down into three different timeframes 2025, 2035 and 2050. Appendix A[7] of the 2021 Regional Plan provides a break down of both the timing and anticipated construction costs (Year 2020 dollars) for each component of the plan.

As outlined in Table A.14[8] (Appendix A) of the 2021 Plan, over $5 billion dollars will be allocated towards the development of the regional Mobility Hub network that is planned throughout the region. In general, the timing of the proposed Mobility Hub improvements will be in conjunction with the Complete Corridor and Transit Leap improvements, outlined in Table A.1.

Based on discussions with SANDAG staff, the locations, features, and amenities within the individual Mobility Hub sites have not yet been defined. SANDAG plans to work with the member agencies to identify the transportation needs and opportunities within each Mobility Hub site. Table A.17[9] (Appendix A) of the 2021 Regional Plan establishes $837 million in future planning and capital grant opportunities in which local jurisdictions can use to identify, plan, and implement transportation related infrastructure, programs, or land uses opportunities associated with the proposed Mobility Hubs, as well as smart growth and/or VMT reduction opportunities. An additional $333 million in grant funding will also be available for member agencies to develop, enhance review, process, and/or update their smart growth and VMT reducing related policies.

3.0 Opportunities to Expand Transit

This section identifies potential options to expand transit services within the Unincorporated County based on both existing and future land uses patterns identified within the County's General Plan.

3.1 Density

A key component to successful transit service is to provide a connection between areas with high densities both in population and employment. When transit services can efficiently connect one higher density area to another, there is a higher propensity that travelers within those areas will have both their origin and destination along the provided transit line, thus, making the use of transit more viable, as noted in the OPR Technical Advisory (see Section 1.3). Additionally, areas with higher existing densities provide more opportunity for infill development, which is encouraged in and around TPAs, as outlined in SB-743. Figure 5 displays the areas within the Unincorporated County that have the highest existing service population[10] density per square mile.

3.2 Village Areas

The *County of San Diego General Plan* identifies a series of areas within the Unincorporated County where higher density development and mixed-use development will be concentrated, known as Village Areas. The main goal of the Village Areas is to support multi-modal and mixed use travel, as outlined in Goal LU-5.1 of the County of San Diego General Plan:

> *Reduction of Vehicle Trips within Communities.* 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 makes the identified Village Areas as ideal locations to increase land use densities to draw and expand more regional transit services and Mobility Hub locations to the Unincorporated County. Figure 6 displays the Village Areas that are identified within the County of San Diego General Plan.

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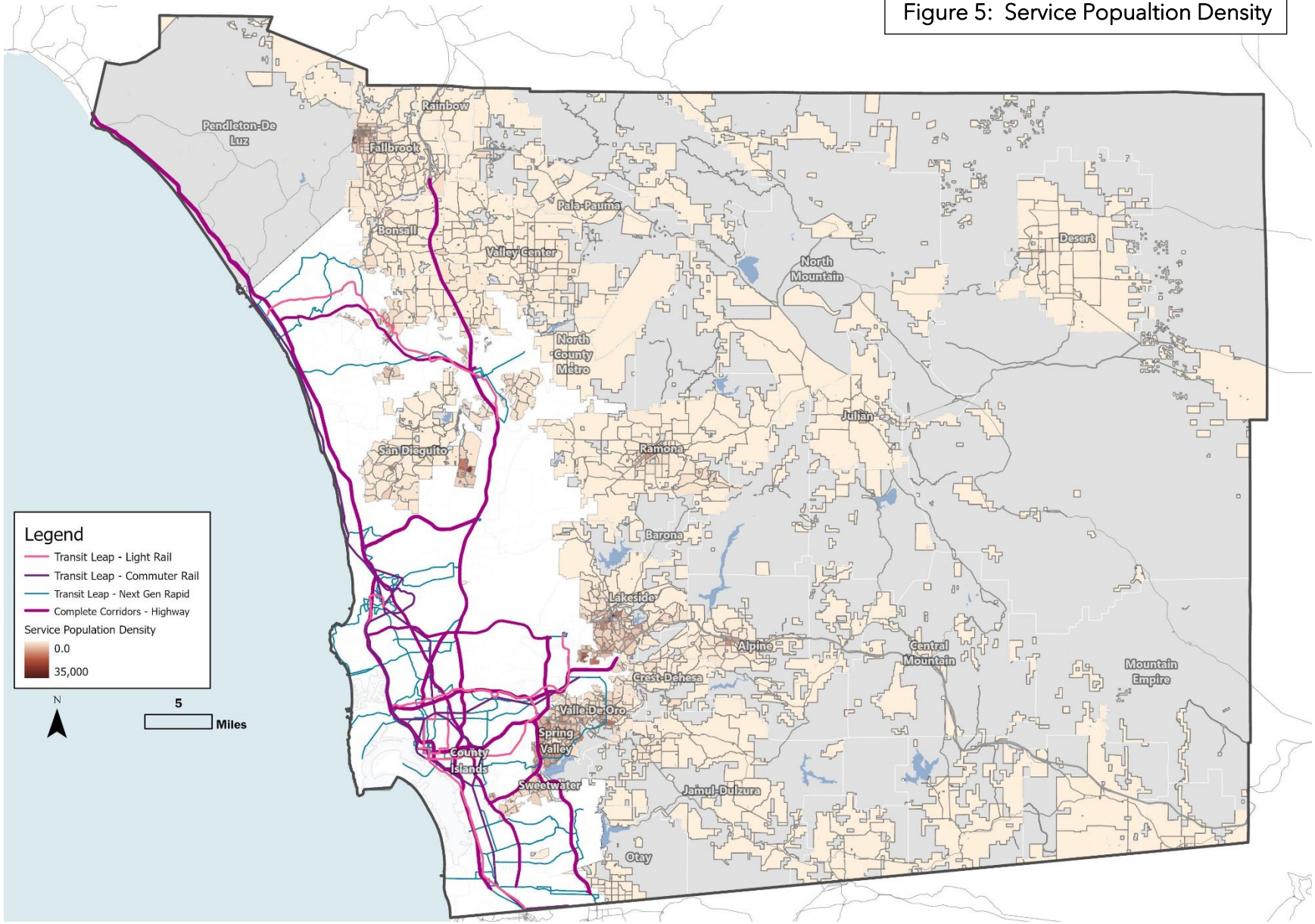
[7] Appendix A: https://sdforward.com/docs/default-source/2021-regional-plan/appendix-a---transportation-projects-programs-and-phasing5715966e63506b1e9dedff0000f4af15.pdf?sfvrsn=ba44fd65_4

[8] Table A.14 is provided as Attachment 2.

[9] Table A.17 is provided as Attachment 3.

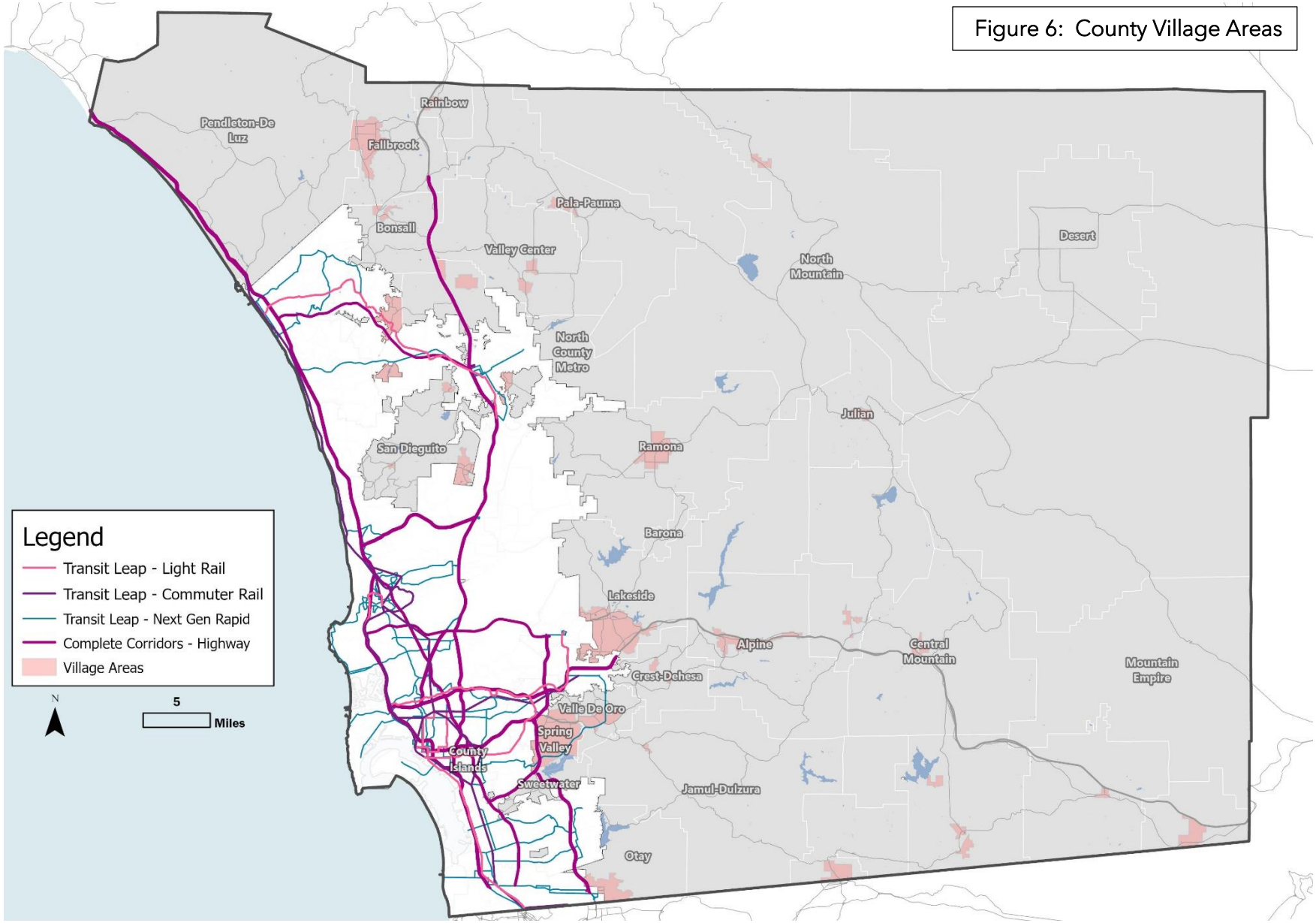
[10] Service Population is the total number of residents plus the total number of jobs within an identified area.

Figure 5: Service Popualtion Density



Source: SANDAG Series 14 Transportation Forecast, Year 2016

Figure 6: County Village Areas



Source: County of San Diego General Plan

3.3 Transit Opportunity Areas

The data previously presented in Figures 2-5 was utilized to identify areas in which the regional transit network has the best opportunity to be expanded within the Unincorporated County. Based on this analysis the following areas were identified to be the best suited for regional transit expansion, as also displayed in Figures 7a through 7c:

San Dieguito East Village Area: As shown in Figures 2 and 6, the San Dieguito East Village Area is located adjacent to the Next Gen Rapid line that is proposed along I-15 corridor. Additionally, the 2021 Regional Plan proposes a Mobility Hub that will fully encompasses the San Dieguito East Village Area, as shown in Figure 3. Finally, as shown in Figure 5 the San Dieguito East Village Area is currently in the top tier of service population densities within the Unincorporated County making it ideal for infill development. Based on these findings, the San Dieguito East Village Area has the highest potential to receive high frequency regional transit service within the Unincorporated County. As such, the County should work with SANDAG to prioritize the development of future transit services and the development of a Mobility Hub within this area. The County should also look for opportunities to incentivize and streamline transit oriented development (TOD) within this area.

Lakeside Village Area: As shown in Figures 5 and 6, parts of the Lakeside Village Area is currently in the highest tier of service population densities within the Unincorporated County. As displayed in Figure 4, the southwest portion of the Lakeside Village Area is located within a proposed Mobility Hub location. Finally, as displayed in Figure 3, I-8 is identified as a future Complete Corridor within the 2021 Regional Plan, which may help to bring high-frequency regional transit to this area. However; it should be noted that the proposed Complete Corridor improvements are planned to end just to the west of the Lakeside Village Area. As such, the County should coordinate with SANDAG to evaluate the potential and feasibility of extending the proposed I-8 Complete Corridor Improvements through the Lakeside Village Area. Additionally, the County should look for opportunities to incentivize and streamline transit oriented development (TOD) within this area, particularly in the areas that are located within the proposed Mobility Hub.

Spring Valley & Valle De Oro Village Areas: As shown in Figure 6, a future Next Gen Rapid Line is proposed along the southeastern boundary of the Spring Valley Valle De Oro Village Areas. The SR-125 Complete Corridor is proposed along the western boundary of the Spring Valley Village Area. As shown in Figure 5, the service population densities within both village areas are in the highest tier within the Unincorporated County. The 2021 Regional Plan did not identify a Mobility Hub within either of the village areas; however, the high quality transit access and service population densities within these village makes them ideal candidates for future or additional Mobility Hub locations. As such, it is recommended that the County coordinate with SANDAG to potentially expand the Mobility Hub network into these areas as well. It is also recommended that the County explore the feasibility of increasing the land use densities along the proposed transit lines within both village areas to better facilitate a potential Mobility Hub and increase the need for transit access.

Sweetwater CPA: As shown in Figure 2, a future Next Gen Rapid line will provide service through the middle of the Sweetwater CPA, the SR-54 Complete Corridor is also proposed along its northern boundary. Both of these facilities should provide ideal transit access to the Sweetwater CPA in the future. However, as shown in Figure 6 there are no Village Areas proposed within the Sweetwater CPA, and as shown in Figure 5, the CPA currently has moderate lot low service population densities. To take advantage of the future transit access within the Sweetwater CPA, it is recommended that the County implement a Village Area within the western portion of the Sweetwater CPA, increase the proposed land use densities within the area, incentivize TOD styles of development, and coordinate with SANDAG to implement a future Mobility Hub within the area.

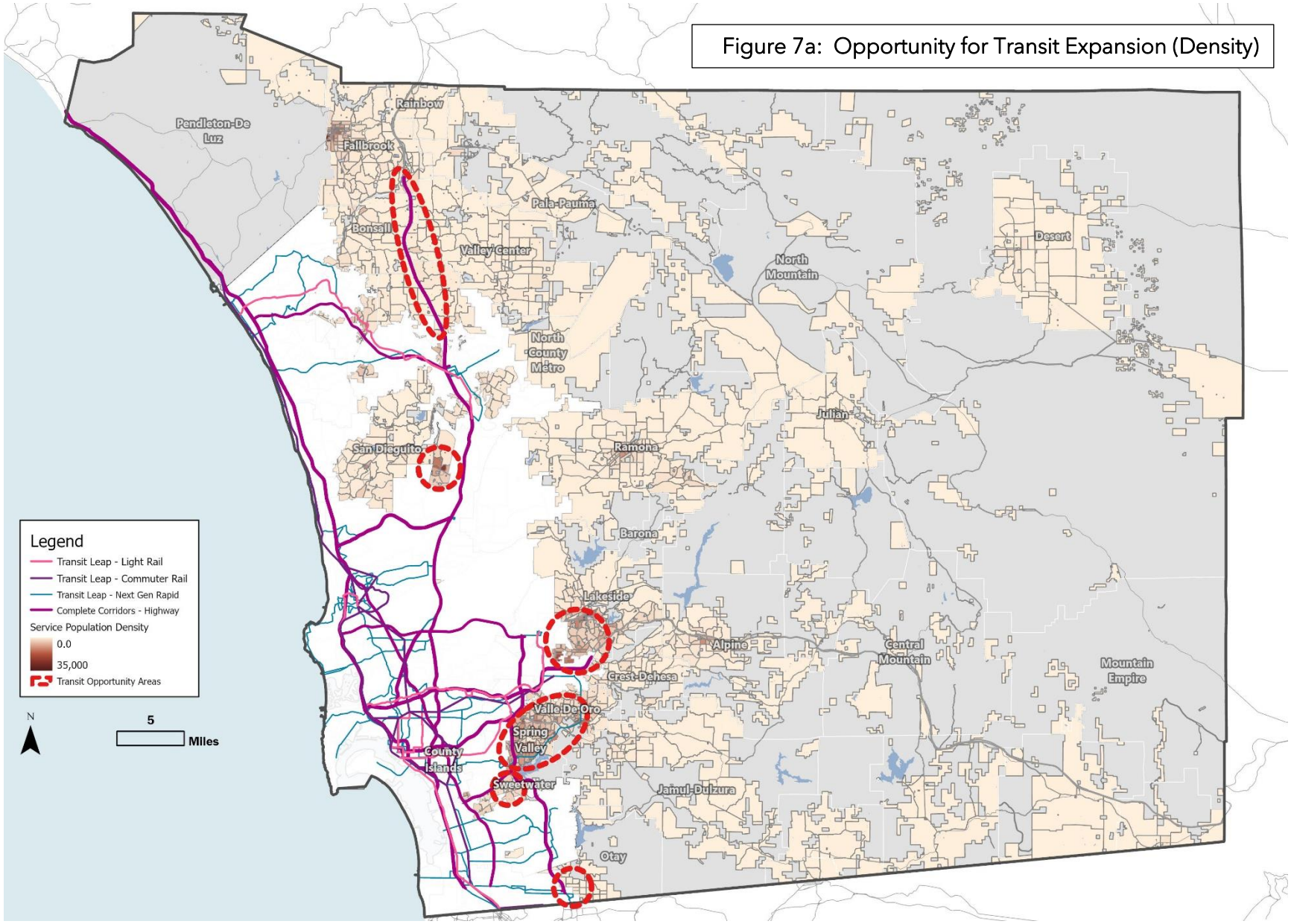


Figure 7a: Opportunity for Transit Expansion (Density)
Pendleton-De Luz
Rainbow
Fallbrook
Bonsall
Pala-Pauma
Valley Center
North Mountain
Desert
North County Metro
Julian
San Dieguito
Ramona
Barona
Lakeside
Alpine
Central Mountain
Mountain Empire
Crest-Dehesa
Valle De Oro
Spring Valley
County Islands
Sweetwater
Jamul-Dulzura
Otay
Legend
Transit Leap - Light Rail
Transit Leap - Commuter Rail
Transit Leap - Next Gen Rapid
Complete Corridors - Highway
Service Population Density
0.0
35,000
Transit Opportunity Areas
N
5
Miles

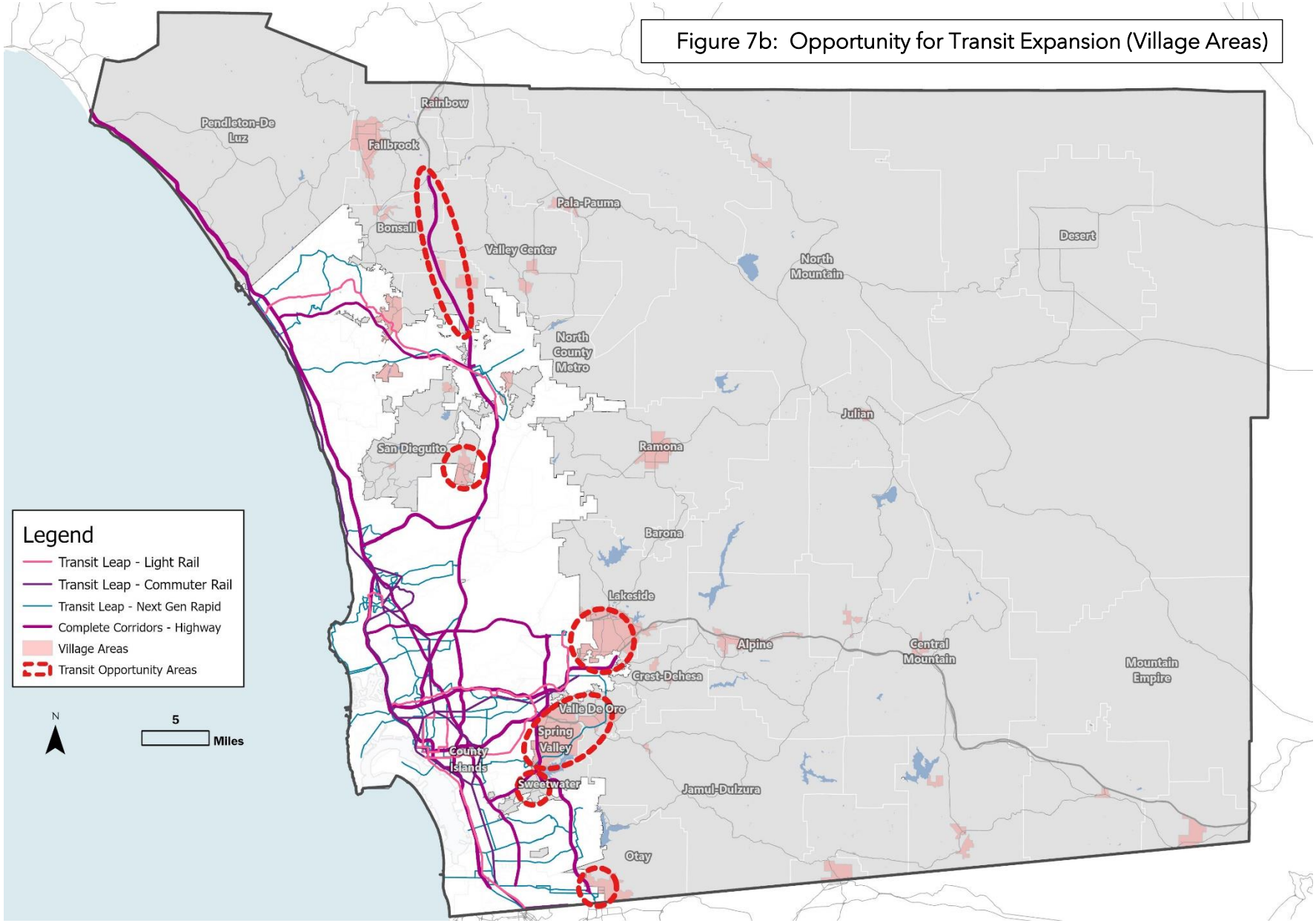


Figure 7b: Opportunity for Transit Expansion (Village Areas)
Pendleton-De Luz
Rainbow
Fallbrook
Bonsall
Pala-Pauma
Valley Center
North Mountain
Desert
North County Metro
Julian
San Dieguito
Ramona
Barona
Lakeside
Alpine
Central Mountain
Mountain Empire
Crest-Dehesa
Valle De Oro
Spring Valley
County Islands
Sweetwater
Jamul-Dulzura
Otay
Legend
Transit Leap - Light Rail
Transit Leap - Commuter Rail
Transit Leap - Next Gen Rapid
Complete Corridors - Highway
Village Areas
Transit Opportunity Areas
N
5
Miles

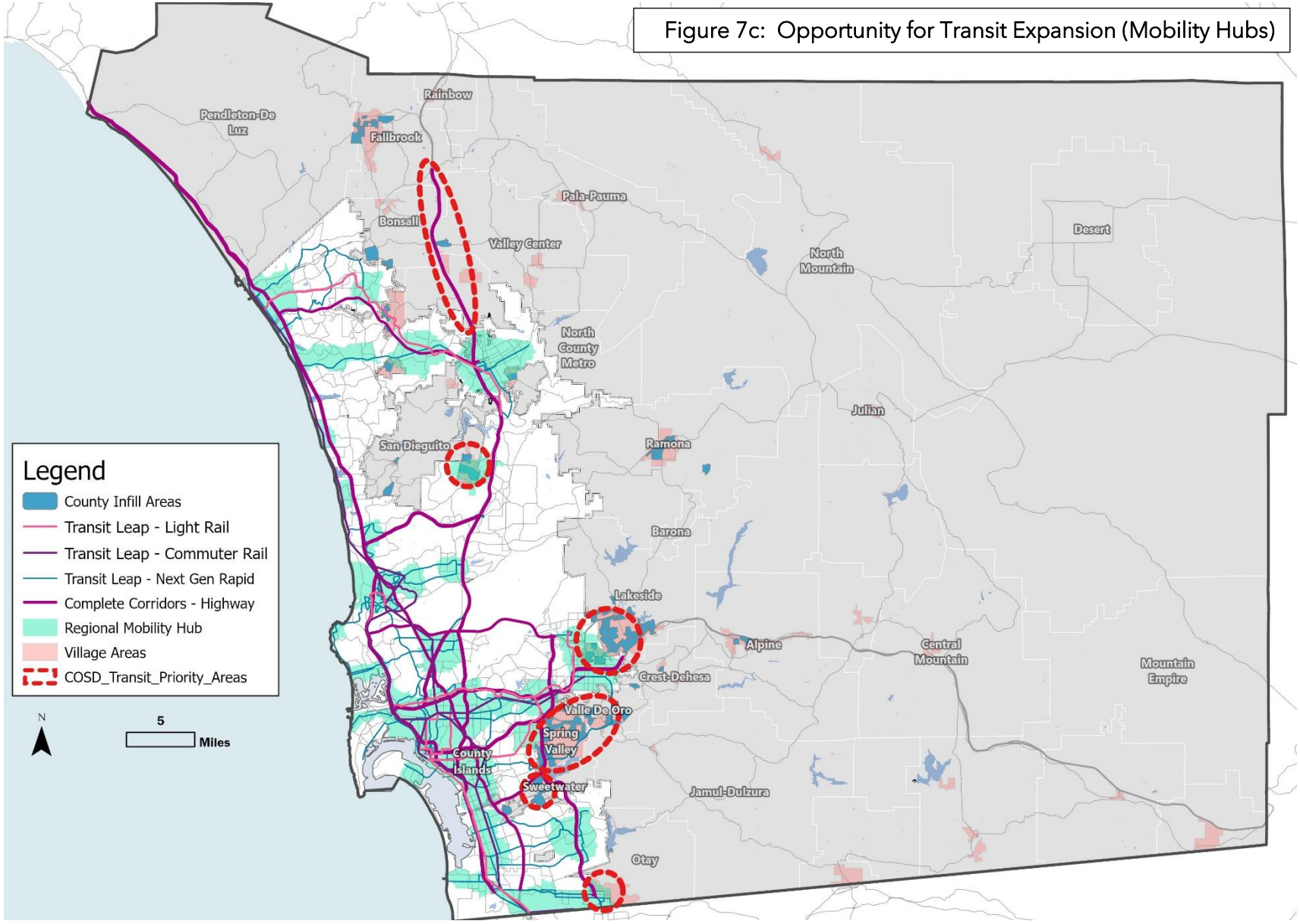


Figure 7c: Opportunity for Transit Expansion (Mobility Hubs)
Pendleton-De Luz
Rainbow
Fallbrook
Bonsall
Pala-Pauma
Valley Center
North Mountain
Desert
North County Metro
Julian
San Dieguito
Ramona
Barona
Lakeside
Alpine
Central Mountain
Mountain Empire
Crest-Dehesa
Valle De Oro
Spring Valley
County Islands
Sweetwater
Jamul-Dulzura
Otay
Legend
County Infill Areas
Transit Leap - Light Rail
Transit Leap - Commuter Rail
Transit Leap - Next Gen Rapid
Complete Corridors - Highway
Regional Mobility Hub
Village Areas
COSD_Transit_Priority_Areas
N
5
Miles

Otay Village: As shown in Figure 6, the Otay Village Area is located directly adjacent to a proposed Next Gen Rapid line and the SR-125 Complete Corridor. The 2021 Regional Plan also proposes a Mobility Hub which encompasses a portion of the Otay Village Area, as shown in Figure 3. As shown in Figure 5, the service population density within the Otay Village Area is currently low; however, the East Otay Mesa Specific Plan does provide the opportunity to substantially increase the employment densities within the area. As such, the County should continue to coordinate with SANDAG to help facilitate the development of both the Next Gen Rapid services as well as the development of the planned Mobility Hub in conjunction with the buildout of the East Otay Mesa Specific Plan.

I-15 Corridor: As shown in Figure 3, the 2021 Regional Plan is proposing that the I-15 corridor become a Complete Corridor, particularly within the northern portion of the Unincorporated County. However, as shown in Figures 4 and 5 there are currently no Mobility Hubs proposed along this corridor and the existing service population densities along the corridor are low. There are two village areas (Hidden Meadows West and Hidden Meadows East) located along the corridor which may present an opportunity to increase the density along the corridor and in which transportation oriented development could be implemented to facilitate and attract future transit services. The County should continue to monitor the progress of the I-15 Complete Corridor plan and adjust the land use densities as needed.

3.4 Rural Mobility Hubs

As shown in Figure 5, the Fallbrook, Ramona, and Alpine Village Areas all are in the top tier of service population density within the Unincorporated County. However, as shown in Figure 6 no future high-frequency regional transit services are planned to access these areas. The County is currently working with SANDAG to investigate the potential for implementing a rural version of Mobility Hubs within these areas. Rural Mobility Hubs would incorporate the same internal multi-modal and Flexible Fleet improvements as the other Mobility Hub areas but would not be incorporated into the regional transit network. The designation of Rural Mobility Hubs within these areas should allow the County to seek grant funding for localized multi-modal improvements within these areas, such as bicycle and pedestrian improvements as well as Flexible Fleet services, as previously outlined in Section 2.3. These improvements, as well as the high service population densities, and mix of land uses should help to reduce VMT within these areas via internal trip capture and transportation mode shifts.

The potential Rural Mobility Hub locations are displayed in Figure 8.

It should be noted that since these areas would not be included within the regional transit network, they are not anticipated to be within a TPA (existing or future). Additionally, while the multi-modal improvements outlined above will help to reduce VMT within these areas, it is not anticipated to reduce the VMT generation to less than significant levels (85% below the regional mean). As such, future development within these areas would most likely have a VMT related impact, even with the Rural Mobility Hub designation. Thus, additional CEQA work would be required for development to occur.

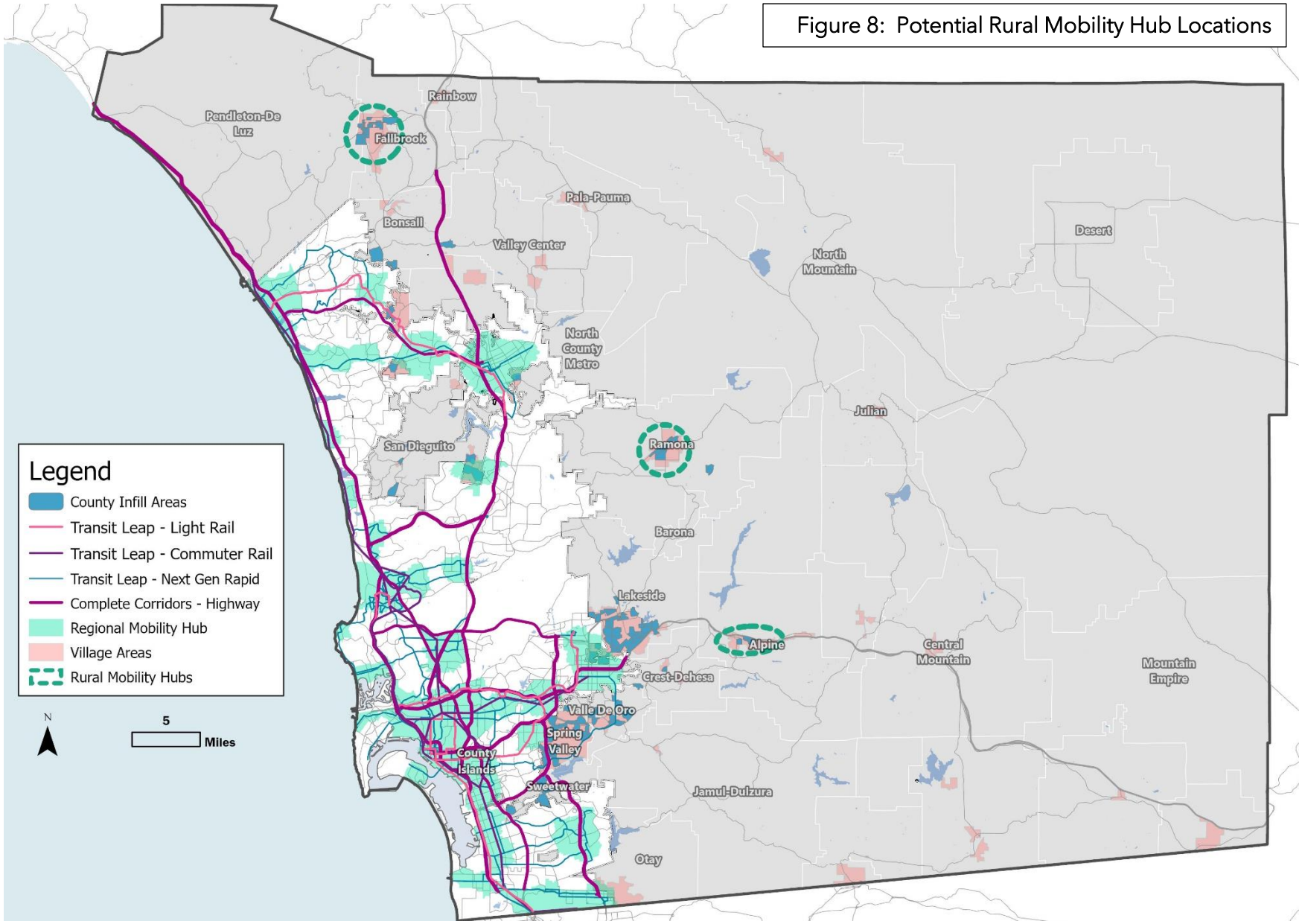


Figure 8: Potential Rural Mobility Hub Locations

4.0 Recommendations

This section provides recommendations on how the County can best move forward in expanding the regional transit network within the Unincorporated County.

4.1 Coordination with SANDAG

Continued coordination with SANDAG staff will be key in both prioritizing the proposed future transit improvements within the Unincorporated County as well as facilitating the further expansion of the regional transit network further into the Unincorporated County. As such, the following efforts are recommended:

Establish Targets: The County should continue to coordinate with SANDAG staff to better understand and identify the land uses, population density, and transportation network indicators and metrics used most when developing the future transit network within the RTP. The County can then use this information to develop a planning framework which establishes a series of land use and transportation infrastructure related targets. This framework can then be used in subsequent planning and implementation efforts to further incentivize land use growth within the Transit Opportunity Areas (outlined in Section 3.3) and help draw future transit services to these areas.

Grant Opportunities: As noted in Section 2.3, the 2021 Regional Plan has reserved over $5 billion for the implementation of the proposed Mobility Hub network. However, the exact location and scope of the improvements included within the Mobility Hub network have not yet been defined. To further this effort and incorporate the SANDAG Member Agencies into the process, the 2021 Regional Plan has set aside $837 million in planning capital grant funding to assist with the planning and implementation of the Mobility Hub network. These grants may provide ideal opportunities to fund the planning and subsequent CEQA efforts to increase the land use densities, implement multi-modal infrastructure, and incentivize infill/TOD style development within the Lakeside, Otay, and San Dieguito Village Areas (all of which are located within planned Mobility Hubs). With these planning efforts in place, subsequent phases of the grant program could then be used to fund the construction of the needed transportation infrastructure that is identified throughout the planning process.

2025 Regional Plan: RTPs are generally released every four years; as such, the next San Diego Forward Plan should be released in Year 2025. Over this time period, it is recommended that the County continue to coordinate with SANDAG staff on their planning and implementation efforts for the Transit Opportunity Areas outlined in Section 3.3. If the County can show that they have further incentivized higher density land use growth within these areas, or similar key areas, then additional transit services to these areas could be planned or better defined within the next RTP.

4.2 Implementation Options

The following provides three different options in which the County can take in implementing the land use and mobility changes that are needed to draw additional transit services to the Unincorporated County.

Transit Development Specific Plans

High-frequency regional transit service is typically only extended to areas which currently have high population or employment densities (or both). Therefore, it cannot be assumed that the high-frequency transit services will be extended into the Unincorporated County prior to the buildout of its village areas. This presents an issue for future development within these areas as they are currently projected to generate VMT at a higher rate than the regional threshold (as shown in Figure 1) and they cannot rely

on the formation of future TPAs[11] to alleviate their VMT related impacts. As such, development within these areas would be identified as having a significant and unavoidable VMT related impact[12]. Therefore, the majority, if not all of the development within these Transit Opportunity Areas would be required to conduct an environmental impact report (EIR) to disclose these impacts and seek an override from the board, even if future transit services are planned within the area.

To help streamline the CEQA process and incentive growth and development within the identified Transit Opportunity Areas, the County can develop a specific plan for one (or multiple) of the Transit Opportunity Sites. The development of a specific plan will allow the County to re-evaluate the land use mixes and densities within these areas, ensure that they are consistent with SANDAGs transit targets, and implement specific policies for these areas to ensure the future development adhere to infill/TOD styles including minimum FAR and parking requirements. A specific plan can also re-evaluate the transportation network within the area and ensure that it provides the multi-modal connectivity that is needed to connect the future transit services to the surrounding land uses as well as maintain consistency with what is envisioned within SANDAG's proposed Mobility Hub network.

The accompanying EIR with any specific planning effort will allow for the VMT related impacts associated with the increase in develop to be disclosed and approved by the Board. The EIR can also tie the plans mitigation strategies to the development of SANDAG's Mobility Hub network as well as the planned expansion of the transit network potentially providing a nexus for future development within these areas pay their fair share towards the implementation of these improvements and services. Future development within these areas will also be able to tier off the findings of the specific plan EIR and would be eligible for 15182 development.

Transit Development Specific Plan Examples

The following provides examples of three separate, recently completed, specific plans that focused on increasing land use densities around existing or proposed transit stations. Each plan also recommend enhancements to the multi-modal infrastructure around the transit station to better connect the land uses to the transit services.

Similar efforts have recently been completed by the City of San Diego with both the Morena Corridor[13] and Balboa Station[14] specific plans at future stations along the Mid-Coast Trolley Line. The specific plans increased land use densities within the study area, identified enhancements to the internal multi-modal network to provide better connectivity to the planned transit stations, and established policies and guidelines to ensure TOD style development would occur. The specific plans also included a subsequent CEQA effort which provides environmental clearance for planned development within the study areas. The Balboa Station Specific Plan was funded through a California Strategic Growth Council Sustainable Communities Planning Grant.

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[11] As noted in Section 15064.3(1)(a):

> 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.

TPAs are only designated when associated with existing transit facilities. Therefore, land development near planned or future transit services and/or facilities can not be assumed to have a less than significant impact until the transit is implemented.

[12] As outlined in the *California Air Pollution Control Officers Association (CAPCOA) Qualifying Greenhouse Gas Mitigation Measures* study identifies a maximum feasible VMT mitigation of 15% for projects within suburban areas. Most locations within the County, even within suburban areas, tend to generate VMT at or above the regional mean. As such, it would be infeasible to mitigate their impacts to 15% below the regional mean through VMT reducing mitigation.

[13] Morena Corridor: https://www.sandiego.gov/planning/community/specificplans/morena-corridor

[14] Balboa Station: https://www.sandiego.gov/planning/community/specificplans/balboa-station

Another example is the City of El Cajon Transit District Specific Plan (TDSP)[15]. Similar to the two City of San Diego examples, TDSP incentivized infill/TOD style development around the El Cajon Transit Center through increased land use densities and the development of a strong multi-modal network connecting the transit center and the adjacent land uses. The Program EIR for the TDSP allows for development within the study area to be streamlined through the 15182 process. Develop of the TDSP and its EIR was funded through a SANDAG grant, similar to what us proposed in the 2021 Regional Plan. Since its adoption, the City of El Cajon has been awarded multiple Highway Safety Improvement Program (HSIP) grants to fund the multi-modal capital improvements that were included in the TDSP.

Focused General Plan Update

In-lieu of developing specific plan(s) for the Transit Opportunity Sites (as outlined above), the County can combine the planning and CEQA efforts for the Transit Opportunity Sites into a focused General Plan update. Including these efforts into a focused General Plan update will allow the County to synchronize and consolidate the development of the transit opportunity areas with other parallel planning such as the Climate Action Plan (CAP), infill opportunity areas, and smart growth planning. Additionally, including the Transit Opportunity Sites directly into the General Plan will still allow the development within these areas to be streamlined through the 15183 process.

Finally, incorporating the planning and CEQA process for the Transit Opportunity Sites into a focused General Plan update will allow for their associated mitigation and facility needs to be integrated seamlessly into the County's development impact fee and mitigation monitoring programs. They can also rely on other features and/or components of the focused General Plan update to allow for self-mitigation or partial mitigation based on the implementation of other planning efforts.

Developing Transit Overlay Zones

A final option for the County to implement the Transit Opportunity Sites, is to amend the zoning code to incorporate a transit overlay zone. The transit overlay zones can be implemented within the Transit Opportunity Sites to encourage infill/TOD style developments. The overlays can allow for increases in land use density, set a minimum floor to area ratios, and reduce parking standards around potential station areas. As noted in Section 1.3, these are key features for developments located within TPAs to reduce or eliminate VMT related impacts and is encouraged by SB-743. The overlays can also allow for a mix of uses to provide more employment and commercial service options for residents within the area, resulting a greater potential for internal trip capture and mode shift, resulting decreased levels of VMT generation.

To implement the transit overlay zones the County will most likely need to conduct a programmatic EIR to document and disclose the impacts associated with the increased densities within the overlay zones, similar to what was required for the Agricultural Promotion Program[16]. Development within the Transit Opportunity Sites would be able to tier off this EIR to help streamline the CEQA process; however, since the EIR will be programmatic in nature, a project level CEQA analysis for individual projects within the Transit Opportunity Sites will still most likely be required.

Items to Consider when Choosing a Process

Each implementation option outlined above has its own set of pros and cons. Therefore, the following items should be considered in determining whether it is best to incorporate the planning and CEQA efforts for the Transit Opportunity Sites into or into specific plan(s), a focused General Plan update, or the development of transit overlay zones:

[15] TDSP: https://www.elcajon.gov/your-government/departments/community-development/planning/transit-district-specific-plan
[16] APP: https://www.sandiegocounty.gov/pds/advance/agriculturepromotion.html

- Is the 15182 or 15183 process the more preferable for the implementation of future development within these areas?
- Which options presents the best opportunity for grant funding (section 2.3)?
- Would the timing align with the development and publishing of the 2025 Regional Plan?
- Which is the best option to integrate these changes into the 2025 SCS?

Attachment 1
Area Type Definition

As used in this Report, location settings are defined as follows:

Urban: A project located within the central city and may be characterized by multi-family housing, located near office and retail. Downtown Oakland and the Nob Hill neighborhood in San Francisco are examples of the typical urban area represented in this category. The urban maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average (assumed analogous to an ITE baseline) for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Central Berkeley	-48%
San Francisco	-49%
Pacific Heights (SF)	-79%
North Beach (SF)	-82%
Mission District (SF)	-75%
Nob Hill (SF)	-63%
Downtown Oakland	-61%

The average reflects a range of 48% less VMT/capita (Central Berkeley) to 82% less VMT/capita (North Beach, San Francisco) compared to the statewide average. The urban locations listed above have the following characteristics:

- Location relative to the regional core: these locations are within the CBD or less than five miles from the CBD (downtown Oakland and downtown San Francisco).
- Ratio or relationship between jobs and housing: jobs-rich (jobs/housing ratio greater than 1.5)
- Density character
  - typical building heights in stories: six stories or (much) higher
  - typical street pattern: grid
  - typical setbacks: minimal
  - parking supply: constrained on and off street
  - parking prices: high to the highest in the region
- Transit availability: high quality rail service and/or comprehensive bus service at 10 minute headways or less in peak hours

Compact infill: A project located on an existing site within the central city or inner-ring suburb with high-frequency transit service. Examples may be community redevelopment areas, reusing abandoned sites, intensification of land use at established transit stations, or converting underutilized or older industrial buildings. Albany and the Fairfax area of Los Angeles are examples of typical compact infill area as used here. The compact infill maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Franklin Park, Hollywood	-22%
Albany	-25%
Fairfax Area, Los Angeles	-29%
Hayward	-42%

The average reflects a range of 22% less VMT/capita (Franklin Park, Hollywood) to 42% less VMT/capita (Hayward) compared to the statewide average. The compact infill locations listed above have the following characteristics:

- Location relative to the regional core: these locations are typically 5 to 15 miles outside a regional CBD
- Ratio or relationship between jobs and housing: balanced (jobs/housing ratio ranging from 0.9 to 1.2)
- Density character
  - typical building heights in stories: two to four stories
  - typical street pattern: grid
  - typical setbacks: 0 to 20 feet
  - parking supply: constrained
  - parking prices: low to moderate
- Transit availability: rail service within two miles, or bus service at 15 minute peak headways or less

As used in this Report, additional location settings are defined as follows:

Suburban Center: A project typically involving a cluster of multi-use development within dispersed, low-density, automobile dependent land use patterns (a suburb). The center may be an historic downtown of a smaller community that has become surrounded by its region's suburban growth pattern in the latter half of the 20th Century. The suburban center serves the population of the suburb with office, retail and housing which is denser than the surrounding suburb. The suburban center maximum reduction is derived from the average of the percentage difference in per capita VMT versus the California statewide average for the following locations:

Location	Percent Reduction from Statewide VMT/Capita
Sebastopol	0%
San Rafael (Downtown)	-10%
San Mateo	-17%

The average reflects a range of 0% less VMT/capita (Sebastopol) to 17% less VMT/capita (San Mateo) compared to the statewide average. The suburban center locations listed above have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: balanced
- Density character
  - typical building heights in stories: two stories
  - typical street pattern: grid
  - typical setbacks: 0 to 20 feet
  - parking supply: somewhat constrained on street; typically ample off-street
  - parking prices: low (if priced at all)
- Transit availability: bus service at 20-30 minute headways and/or a commuter rail station

While all three locations in this category reflect a suburban "downtown," San Mateo is served by regional rail (Caltrain) and the other locations are served by bus transit only. Sebastopol is located more than 50 miles from downtown San Francisco, the nearest urban center. San Rafael and San Mateo are located 20 miles from downtown San Francisco.

Suburban: A project characterized by dispersed, low-density, single-use, automobile dependent land use patterns, usually outside of the central city (a suburb). Suburbs typically have the following characteristics:

- Location relative to the regional core: these locations are typically 20 miles or more from a regional CBD
- Ratio or relationship between jobs and housing: jobs poor
- Density character
  - typical building heights in stories: one to two stories
  - typical street pattern: curvilinear (cul-de-sac based)
  - typical setbacks: parking is generally placed between the street and office or retail buildings; large-lot residential is common
  - parking supply: ample, largely surface lot-based
  - parking prices: none
- Transit availability: limited bus service, with peak headways 30 minutes or more

The maximum reduction provided for this category assumes that regardless of the measures implemented, the project's distance from transit, density, design, and lack of mixed use destinations will keep the effect of any strategies to a minimum.

Attachment 2
2021 Regional Plan - Table A.14

Table A.14: Mobility Hubs and Flexible Fleets

Mobility Hubs and Flexible Fleets					
Project ID	**Year Built**	**Category**	**Project Name**	**Description**	**Cost ($2020) Millions**
MH1	2025	Mobility Hubs	Mobility Hub Amenities	Mobility Hub amenities including secure micromobility parking and e-charging, interactive travel kiosks, electric vehicle charging infrastructure, passenger loading zones, parcel delivery lockers, and carshare parking	$152
MH2	2035	Mobility Hubs	Mobility Hub Amenities	Mobility Hub amenities including secure micromobility parking and e-charging, interactive travel kiosks, electric vehicle charging infrastructure, passenger loading zones, parcel delivery lockers, and carshare parking	$247
MH3	2050	Mobility Hubs	Mobility Hub Amenities	Mobility Hub amenities including secure micromobility parking and e-charging, interactive travel kiosks, electric vehicle charging infrastructure, passenger loading zones, parcel delivery lockers, and carshare parking	$285
MHLA2	2035	Mobility Hubs	Other Mobility Hub Land Acquisition	Land acquisition for additional future Mobility Hub anchor stations	$66
CCSI1	2035	Mobility Hubs	Complete Streets Improvements	Complete streets improvements within Mobility Hubs such as pedestrian, micromobility, and other traffic calming treatments that complement the Adopted Regional Bike Network.	$1,809
CCSI2	2050	Mobility Hubs	Complete Streets Improvements	Complete streets improvements within Mobility Hubs such as pedestrian, micromobility, and other traffic calming treatments that complement the Adopted Regional Bike Network.	$667
FF1	2025	Flexible Fleets	Flexible Fleets Operations	Operations for Flexible Fleet services including micromobility, ridehail/carshare, rideshare microtransit, and last mile delivery	$161
FF2	2035	Flexible Fleets	Flexible Fleets Operations	Operations for Flexible Fleet services including micromobility, ridehail/carshare, rideshare microtransit, and last mile delivery	$538
FF3	2050	Flexible Fleets	Flexible Fleets Operations	Operations for Flexible Fleet services including micromobility, ridehail/carshare, rideshare microtransit, and last mile delivery	$1,094

Attachment 2
2021 Regional Plan - Table A.17

Table A.17: Supporting Policies and Programs ($2020) Millions

Supporting Policies and Programs ($2020) Millions				
	2025	2035	2050	Total
Land Use and Regional Growth				
Planning and Capital Mobility Hub/Smart Growth/Vehicle Miles Traveled Reduction Grants	$75	$262	$500	$837
Member Agency Resources to enhance development review/processes/update policies	$25	$100	$208	$333
Housing				
Affordable Housing Grant Program	$730	$1,400	$500	$2,630
Climate Action Planning				
CAP Monitoring Program	$4	$20	$12	$37
CAP Implementation Grants	$20	$100	$150	$270
Regional Carbon Reduction Program Management	$6	$150	$150	$306
Climate Adaptation and Resilience				
Climate Adaptation and Resilience Program	$8	$75	$75	$158
Nature-based Climate Solutions	$40	$325	$200	$565
Resilient Capital Grants and Innovative Solutions	$20	$215	$100	$335
Electric Vehicles				
Incentives for Zero-Emission Vehicles	$52	$552	—	$604
EV Charging Stations	$45	$133	$91	$270
Hydrogen Fueling Stations	—	$100	$150	$250
Zero-Emission Buses and Infrastructure	$75	$250	$332	$657
Goods Movement Vehicles and Infrastructure	$25	$100	$104	$229
Parking and Curb Management				
Member agency resource/coordination	$8	$100	$40	$148

Supporting Policies and Programs ($2020) Millions				
	2025	2035	2050	Total
Transportation Demand Management				
GO by BIKE	$0.2	$0.5	$1	$1
TDM Innovation and Shared Streets Grants	$1	$50	$4	$55
E-bike incentive	$5	$15	$15	$35
Program Administration	$19	$59	$89	$167
Commuter Services and Bike Program	$18	$35	$56	$109
Rideshare Incentive Program	$1	$1	$2	$4
Marketing, Outreach, and Education	$11	$23	$35	$69
TDM Ordinance	$8	$40	$60	$108
Vision Zero				
Member agency project resource/coordination	$6	$25	$15	$46
Community Based Education	$4	$25	$25	$54
Capital and Planning grants	$25	$150	$150	$325

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

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 K: OPR 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.)

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[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]

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[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.

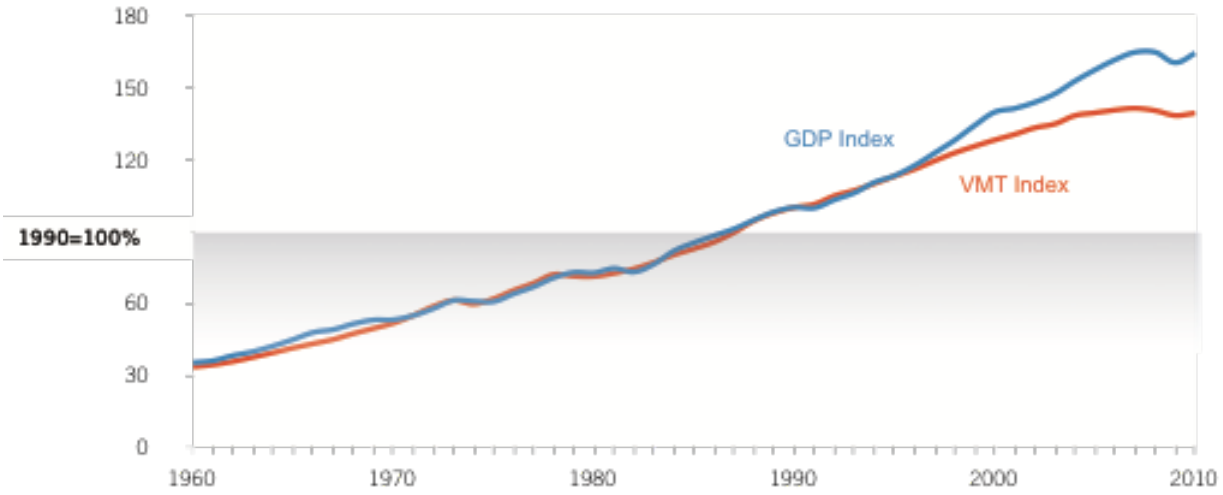

Figure 1. Kooshian and Winkelman (2011) *VMT and Gross Domestic Product (GDP), 1960-2010*.

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]

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[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.

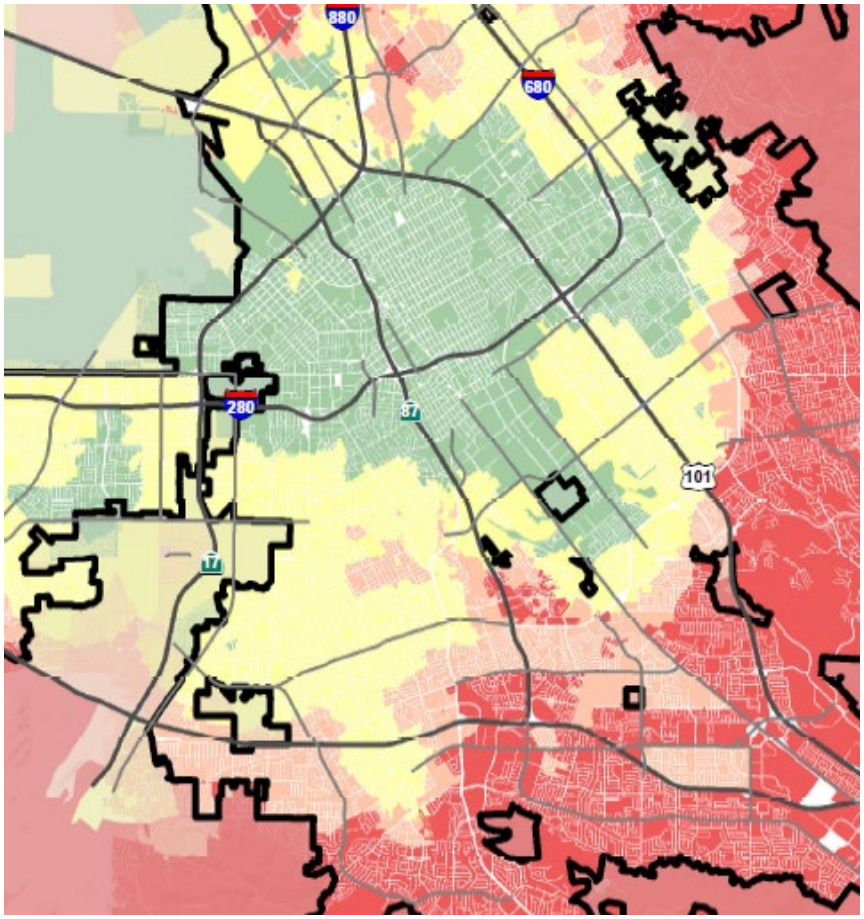

Figure 2. Example map of household VMT that could be used to delineate areas eligible to receive streamlining for VMT analysis. (Source: City of San José, Department of Transportation, draft output of City Transportation Model.)

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.