RESOLUTION NO. 20-44

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GOLETA, CALIFORNIA, ADOPTING GUIDELINES FOR THE IMPLEMENTATION OF VEHICLE MILES TRAVELLED, INCLUDING VEHICLE MILES TRAVELLED THRESHOLDS OF SIGNIFICANCE, FOR LAND USE AND TRANSPORTATION PROJECTS IN THE CITY OF GOLETA AND FINDING THE SAME IS NOT A PROJECT SUBJECT TO THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

WHEREAS, on August 19, 2008, the Goleta City Council adopted Resolution 08-40 establishing the City of Goleta's Environmental Review Guidelines for the Implementation of the Provisions of the California Environmental Quality Act (City's Local CEQA Guidelines);

WHEREAS the City's Local CEQA Guidelines incorporate by reference and adopt the "County of Santa Barbara Environmental Thresholds and Guideline Manual, Published May 1992, Revised January 1995, October 2001, and October 2002"; and

WHEREAS the State Guidelines for Implementation of the California Environmental Quality Act ("CEQA") (14 Cal. Code Regs. § 15000 et seq. "State CEQA Guidelines") encourage public agencies to develop and publish generally applicable "thresholds of significance" to be used in determining the significance of a project's environmental effects; and

WHEREAS State CEQA Guidelines section 15064.7(a) defines a threshold of significance as "an identifiable quantitative, qualitative or performance level of a particular environmental effect, noncompliance 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"; and

WHEREAS State CEQA Guidelines section 15064.7(b) requires that thresholds of significance must be adopted by ordinance, resolution, rule, or regulations, developed through a public review process, and be supported by substantial evidence; and

WHEREAS Senate Bill 743, enacted in 2013 and codified in Public Resources Code section 21099, requires changes to the State CEQA Guidelines regarding the criteria for determining the significance of transportation impacts of projects; and

WHEREAS, in 2018, the Governor's Office of Planning and Research ("OPR") proposed, and the California Natural Resources Agency certified and

adopted, new State CEQA Guidelines section 15064.3 that identifies vehicle miles traveled ("VMT") – meaning the amount and distance of automobile travel attributable to a project – as the generally appropriate metric to evaluate a land use project's transportation impacts; and

WHEREAS, as a result, automobile delay, as measured by "level of service" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA; however, level of service analysis continues to be required under General Plan Policy TE-4 and is an integral part of the City's planning process; and

WHEREAS State CEQA Guidelines section 15064.3 goes into effect on July 1, 2020, though public agencies may elect to be governed by this section immediately; and

WHEREAS the City of Goleta, following a public hearing process, wishes to adopt Guidelines for the Implementation of VMT ("VMT Guidelines"), including VMT Thresholds of Significance ("VMT Thresholds"), that would apply to land use and transportation projects in the City of Goleta that are subject to CEQA; and

WHEREAS the VMT Thresholds of Significance will amend and restate the transportation thresholds in the City of Goleta's current Local CEQA Guidelines, which are found in Section 18 of the City's Local CEQA Guidelines (i.e., Section 18 of Exhibit A to Resolution 08-40); and

WHEREAS, on June 22, 2020, the Planning Commission provided input on the proposed VMT Guidelines and VMT Thresholds; and

WHEREAS the VMT Guidelines and VMT Thresholds are supported by substantial evidence set forth in the July 7, 2020, City Council staff report, and technical memoranda prepared by the City's consultants (Exhibit A to this Resolution) in support of the VMT Guidelines and VMT Thresholds.

NOW, THEREFORE, BE IT RESOLVED by the City of Goleta City Council as follows:

SECTION 1. In its capacity as lead agency, the City of Goleta City Council has evaluated the proposed VMT Guidelines and VMT Thresholds to determine whether the VMT Guidelines and VMT Thresholds are subject to environmental review under Public Resources Code section 21000 et seq. ("CEQA"). The City Council for the City of Goleta hereby finds and determines that the VMT Guidelines and VMT Thresholds are not a project within the meaning of Public Resources Code section 21065 and State CEQA Guidelines section 15378. The VMT Guidelines and VMT Thresholds would not lead to a direct or a reasonably foreseeable indirect change in the physical environment. The VMT Guidelines and VMT Thresholds are an administrative activity of the City. Specifically, the VMT Guidelines and VMT Thresholds provide guidance to property owners,

project developers, applicants, and proponents for determining the significance of transportation impacts of land use and transportation projects under CEQA. The VMT Guidelines and VMT Thresholds do not approve any specific development and would not lead to any particular physical change to the environment. Thus, the VMT Guidelines and VMT Thresholds are not a project under Public Resources Code section 21065 and State CEQA Guidelines section 15378(b)(5). For these reasons, the VMT Guidelines and VMT Thresholds are not subject to further environmental review under CEQA.

SECTION 2. Based upon substantial evidence set forth in the record of proceedings, including but not limited to the July 7, 2020 City Council Staff Report on the VMT Guidelines and VMT Thresholds, as well as the technical memoranda (Exhibit A to this Resolution) prepared by the City's consultants in support of the City of Goleta's VMT Guidelines and VMT Thresholds, the City of Goleta hereby adopts the VMT Guidelines, which include the VMT Thresholds, for measuring project transportation impacts under CEQA, which are attached hereto as Exhibit A and incorporated herein by this reference. The VMT Thresholds shall supersede and replace the existing transportation thresholds in the City of Goleta's current Local CEQA Guidelines. Staff shall update the VMT Guidelines, including the baseline VMT by service population, at the same time as, or as close thereto as reasonably possible, updates occur to the Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) and Santa Barbara County Association of Government regional transportation model.

SECTION 3. This Resolution shall take effect immediately upon its adoption by the City Council, and the Clerk of the Council shall attest to and certify the vote adopting this Resolution.

SECTION 4. The documents and materials that constitute the record of proceedings on which these findings are based are located at City Hall for the City of Goleta, located at 130 Cremona Drive, Goleta, California. The City Clerk is the custodian of the record of proceedings.

SECTION 5. Staff is directed to file a Notice of Exemption with the County of Santa Barbara within five (5) working days of approval of the VMT Thresholds.

SECTION 6 The City Clerk shall certify to the adoption of this Resolution and enter it into the book of original resolutions.

PASSED, APPROVED AND ADOPTED this 7th day of July 2020.

PAULA PEROTTE
MAYOR

ATTEST:

DEBORAH S. LOPEZ
CITY CLERK

APPROVED AS TO FORM:

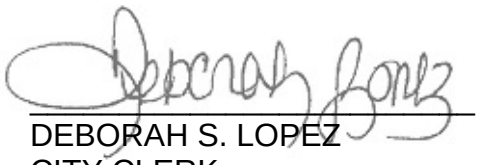
MICHAEL JENKINS
CITY ATTORNEY

STATE OF CALIFORNIA)
COUNTY OF SANTA BARBARA) ss.
CITY OF GOLETA)

I, DEBORAH S. LOPEZ, City Clerk of the City of Goleta, California, DO HEREBY CERTIFY that the foregoing Resolution No. 20-44 was duly adopted by the City Council of the City of Goleta at a regular meeting held on the 7th day of July, 2020 by the following roll call vote of the City Council:

AYES:	MAYOR PEROTTE, MAYOR PRO TEMPORE RICHARDS, COUNCILMEMBERS ACEVES, KASDIN AND KYRIACO
NOES:	NONE
ABSENT:	NONE
ABSTENTIONS:	NONE

(SEAL)



DEBORAH S. LOPEZ
CITY CLERK

VMT Threshold Study

CITY OF GOLETA

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Executive Summary

Senate Bill (SB) 743 fundamentally changed the way Transportation Analysis is conducted as part of the California Environmental Quality Act (CEQA) and Environmental Impact Reports (EIR's). Automobile Level of Service, although permitted as a local policy threshold, is no longer considered an impact on the environment. Instead vehicle miles of travel are now the primary Transportation Metric for evaluated projects under CEQA. SB 743 provides agencies the authority to establish their impact thresholds and criteria based on guidance provided by the California Office of Planning and Research (OPR). The purpose of this study is to assess and recommend analysis tools, environmental baseline, and impact criteria in accordance with SB 743 and OPR guidance.

Thru this analysis GHD has found that the Santa Barbara County Association of Governments (SBCAG) model is the most accurate tool for measuring full length Vehicle Miles Traveled (VMT) as prescribed by OPR, GHD in collaboration with DKS and Convergence Planning also updated the City's VISUM model and developed a sketch planning tool for conducting VMT analysis. Consistent with SB 743 and OPR guidance the following standards are established and the VMT Criteria for the City of Goleta:

BASELINES –Criteria Projects shall be measured against.

RESIDENTAL PROJECTS: City Average VMT Per Capita

WORK PROJECTS: City Average VMT Per Employee

OTHER PROJECTS: Net City VMT

THRESHOLDS OF SIGNIFICANCE – Level of VMT which is considered a potentially significant impact.

RESIDENTIAL & WORK PROJECTS: 15% Below City Average

OTHER PROJECTS: Net Increase in City VMT

SCREENING CRITERIA –Conditions which projects may not be required conducted VMT analysis and maybe presumed to have a less than significant impact.

1. SMALL PROJECTS: Projects that generate less than 110 Daily Trips
2. MAP BASED: High efficiency VMT Zones for Residential & Work Base Projects (Figures 3.1 & 3.2)
3. TRANSIT PROXIMITY: Projects within ½ mile of stops with 15 Minute service, excluding areas within that ½ mile distance that cross Hwy 101.

4. AFFORDABLE HOUSING: Housing projects with a minimum of 20% “low” or “very low” affordable housing unit proportion.
5. LOCALLY SERVIING RETAIL: Retail projects of less than 10,000 SqFt, where there is substantial evidence to support that the retail project is locally serving.

City of Goleta retains authority, at the discretion of the Public Works or Community Development Director, to require a VMT analysis if projects meet screening criteria.

LOCAL AUTOMOBILE LEVEL OF SERVICE POLICY

The City of Goleta retains its local level of service policies as established in Chapter 7.0 of the City’s General Plan.

Where project VMT impacts are identified Section 4 of this report provides guidance on a range of mitigation strategies that maybe employed and the maximum VMT reductions that can be achieved by various strategies. The City retains its discretionary authority to determine, upon the basis of project specific technical analysis, which mitigation measures may be eligible on a project by project basis and the extent to which those mitigation measures reduce VMT.

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1. Introduction

1.1 Background

Senate Bill (SB) 743 was signed into law in 2013, with the intent to better align CEQA practices with statewide sustainability goals related to efficient land use, greater multimodal choices, and greenhouse gas reductions. The provisions of SB 743 become effective Statewide on July 1, 2020. Under SB 743, automobile delay, traditionally measured as level of service (LOS) will no longer be considered an environmental impact under the California Environmental Quality Act (CEQA). Instead, impacts will be determined by changes to Vehicle Miles Traveled (VMT). VMT measures the number and length of vehicle trips made on a daily basis. VMT is a useful indicator of overall land use and transportation efficiency, where the most efficient system is one that minimizes VMT by encouraging shorter vehicle trip lengths, more walking and biking, or increased carpooling and public transit. However, SB 743 does not preclude Cities from maintaining or establishing automobile delay / level of service as a local policy outside of CEQA.

1.2 Purpose

The City has contracted GHD, and sub-consultants Convergence Planning, Rincon, and DKS Associates to develop procedures for assessing transportation impacts under CEQA, per SB 743, and update the City's Environmental Thresholds and Guidelines Manual. GHD will develop baseline VMT estimates, project screening criteria, thresholds of significance, mitigation strategies, and methodologies for evaluating land development and transportation infrastructure using VMT as the primary impact criterion. GHD is also developing a sketch planning tool for City and project applicant use.

2. VMT Baseline Methodology

2.1 Regulatory & Planning Framework

Measuring VMT requires estimating or measuring the full length of vehicle trips by purpose, such as commutes, deliveries, or shopping trips that often cross between cities, counties, or states. For this reason, regional travel demand models, "big data," and household travel surveys that are less limited by local agency boundaries are the preferred tools to estimate VMT under SB 743.

2.1.1 Governor's Office of Planning and Research (OPR) Technical Advisory

In December 2018, OPR released its final *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Generally, OPR recommends that a reduction of 15% or more in VMT should be the target. Below is a summary of OPR's recommended VMT impact thresholds and methodologies for land use projects:

Residential (VMT/capita) – A proposed project exceeding a level of 15% below existing regional VMT per capita may indicate a significant transportation impact.

Existing VMT per capita may be measured as regional VMT per capita or as city VMT per capita. Proposed development referencing a threshold based on city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the number of units specified in the Sustainable Communities Strategy (SCS) for that city, and should be consistent with the SCS.

Office (VMT/employee) - A proposed project exceeding a level of 15% below existing regional VMT per employee may indicate a significant transportation impact.

Retail (net VMT) – A proposed project that results in a net increase in total area VMT may indicate a significant transportation impact.

Mixed-Use - Evaluate each component independently using above thresholds.

Redevelopment Projects - Measured based on net change in VMT for total area.

Infrastructure Projects - Measured based on net change in VMT for total area.

OPR Recommended Screening Thresholds

OPR's Technical Advisory lists the following screening thresholds for land use projects. These types of development projects are presumed to have a less than significant impact on vehicle miles traveled and therefore, a less than significant adverse impact on transportation. OPR's Technical Advisory suggests that lead agencies may screen out VMT impacts using project size, maps, transit availability, and provision of affordable housing.

- Projects that are consistent with the Sustainable Communities Strategy (SCS) or General Plan and generate or attract fewer than 110 daily trips (per CEQA).
- Map-based screening for residential and office projects located in low VMT areas, and incorporate similar features (density, mix of uses, transit accessibility).

- Certain projects within ½ mile of an existing major transit stop[1] or an existing stop along a high quality transit corridor. However, this will not apply if information indicates that the project will still generate high levels of VMT.
- Affordable Housing Development in infill locations.
- Locally-serving retail projects, typically less than 50,000 square feet.

2.1.2 Caltrans Draft VMT-Focused Transportation Impact Study Guidelines

Caltrans recently published a draft update for their *Transportation Impact Study Guidelines* (Draft TISG, February 28, 2020). The Caltrans' *Draft TISG* is intended for use in preparing a transportation impact analysis of land use projects or plans that may impact or affect the State Highway System. Caltrans Local Development-Intergovernmental Review program would review development proposals as they deem necessary.

The *Draft TISG* heavily references OPR's *Technical Advisory* as a basis for its guidance. The *Draft TISG* recommends use of OPR's recommended thresholds for land use projects (15% below existing city or regional VMT per capita or per employee). As each lead agency develops and adopts its own VMT thresholds for land use projects, Caltrans will review them for consistency with OPR's recommendations, and with the state's greenhouse gas (GHG) emissions reduction targets and California Air Resources Board (CARB) Scoping Plan.

Caltrans identifies a possible mitigation framework for projects found to have a potentially significant impact on VMT. From Caltrans' guidelines, these include the following programmatic measures:

- Impact fee programs that contain a demonstrated nexus and proportionality between a fee and capital projects that result in VMT reduction;
- Regionally administered VMT mitigation bank programs; and,
- Peer to peer VMT mitigation exchange programs (off-site mitigation).

Caltrans also indicates that a future update to the *Draft TISG* will include the basis for requesting transportation impact analysis that is *not* based on VMT (including multimodal conflict/access management issues). GHD will continue to monitor future updates for consideration as part of this effort for the City.

2.1.3 Caltrans Draft Transportation Analysis Framework (TAF) and Transportation Analysis under CEQA (TAC)

Caltrans recently published documents related to SB 743 implementation. The TAC document is for land use projects and the TAF is for transportation projects and induced travel analysis. The TAC provides a consistent implementation of the new CEQA guidelines by assisting Caltrans Districts in

[1] "major transit stop" - A major transit stop is a "site containing an existing rail, a ferry terminal served by bus or rail transit service, or intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during morning and evening peak hour commute". (OPR 2018)

identifying the best approach for analyzing VMT (induced travel) under CEQA for projects in the State Highway System. The TAF refers to OPR's Technical Advisory for the list of highway 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".

TAC Screening:

"The use of VMT as the CEQA transportation metric will, for the most part, impact only capacity-increasing projects. For other types of transportation projects, CEQA does not require a VMT impacts analysis beyond the screening process. Generally, there are two reasons such an analysis is not warranted. The first is because the type of project is expected to decrease or have no impact on VMT. The second is because the project's VMT impacts have already been analyzed and, when necessary, mitigated to the extent feasible in an earlier CEQA document; thus, the analysis may "tier" from or otherwise rely on that earlier analysis."

2.1.4 VMT Evaluation Criteria

GHD has recommended a variation on the OPR *Technical Advisory* land use type criteria to account for uses commonly found in the City. GHD proposes that the City of Goleta assess land development projects according to the primary proposed land use type, as follows:

A. **Residential VMT** – Establish baseline VMT and threshold on a per capita basis. "Residential" uses include, but are not limited to, single-family, multi-family, and mobile homes.

B. **Work VMT** – Establish baseline VMT and threshold on a per employee basis. "Work" uses include, but are not limited to, office, office parks, light industrial, industrial, warehousing, manufacturing, and business parks.

A. **Retail VMT** – Measure net VMT within boundary, and determine threshold based on net change. "Retail" uses include, but are not limited to, supermarkets, restaurants, gas stations, wineries, agriculture tourism, and hotels. Public and recreational uses such as parks, hospitals, libraries, and public services may also be assessed in this way, if needed, as they are primarily visitor-serving uses.

B. **Mixed-Use Projects** – Evaluate each component independently using the above thresholds, considering credit for internal capture, OR evaluate dominant use.

C. **Redevelopment Projects** - Measured based on net change in VMT for total area.

D. **Transportation Projects** – Transportation impacts of a transportation project should be calculated based on the change in VMT. If a project would likely lead to a substantial or measurable increase in vehicle travel, the City should conduct an analysis to assess the amount of induced travel. Additionally, OPR's Technical Advisory identifies a list of projects that would *not* likely lead to a substantial increase in vehicle travel, and therefore should not require an induced travel analysis. This list is included as an attachment. **GHD recommends that the City use the change in VMT to assess the transportation impacts of a transportation project, and that the City adopts this screening criteria.**

E. **Land Use Plans** – Transportation impacts should be analyzed over the full area for which the plan may substantially effect travel patterns, including beyond the plan boundary or jurisdictional geography. 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.

2.2 Baseline VMT Methodology & Data Sources

State guidance provides that project-level VMT be assessed against statewide, regional, or local averages, per capita or per employee depending on the Project type. The primary purpose of this analysis is to consider and recommend baseline averages that reflect the travel behavior of their residents and employees. This baseline will be the measuring stick that all future projects will be measured against, until baselines are updated. GHD recommends updating the baseline VMT estimates concurrent with updates to the Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) and SBCAG Model. The SBCAG "Fast Forward 2040" is the current RTP/SCS, adopted in August 2017.

2.2.1 SBCAG RTDM

The regional SBCAG RTDM was utilized to estimate trip-based Work and Residential Baseline VMT for the incorporated areas of the City. The SBCAG model runs in the TransCAD software platform, and has a base year of 2010 and a forecast year of 2040. The model generates trips based on the land uses and where people will live, work, study and shop, taking into account forecasted population growth. The model generates and tracks all trip types by all modes of transportation use that originate or end in each jurisdiction of Santa Barbara County (considered "internal" trips), as well as all trips (not separated by trip purpose) from or into Ventura and San Luis Obispo Counties (considered "External" trips), including specifically the Cities of San Luis Obispo, Ventura, Oxnard, Camarillo, Simi Valley, and Thousand Oaks. The use of the SBCAG RTDM for evaluation of VMT and associated trip distances is limited to the boundary of the three counties.

The base year 2010 model was utilized to estimate baseline VMT for the City of Goleta. The SBCAG RTDM produces trips by different trip purposes and modes, and provides VMT as an output. To estimate trips associated with Residential VMT, all Home-Based vehicular trips (HBx[2]) internal to Santa Barbara County, and external trips between Santa Barbara County and San Luis Obispo and Ventura Counties ("IX" trips in the below tables), were selected for evaluation of VMT per capita. To estimate trips associated with Work VMT, only Home-Base-Work (HBW) vehicular trips and "IX" trips were selected for evaluation. Table 2.1 and Table 2.2 present the trip purposes used for Residential and Work VMT evaluations, respectively. The weighted average trip length for "IX" trips in the SBCAG RTDM is 26.81 miles.

[2] HBx refers to any "Home based" trips, where "x" stands for work, shopping, school, and other trips.

Table 2.1 Selected Trip Purposes for Residential VMT

Trip Purpose Categories (SBCAG RTDM)		Mode Type				
		Drove Alone (DA)	Shared Ride (SR)	Transit	Walk	Bike
HBW	Home based work	USED	USED	-	-	-
HBS	Home based shop	USED	USED	-	-	-
HBSC	Home based K-12	USED	USED	-	-	-
HBO	Home based other	USED	USED	-	-	-
NHBO	Non-home based other	-	-	-	-	-
NHBW	Non-home based work	-	-	-	-	-
VIS	Visitor	-	-	-	-	-
IX*	Internal to External	USED	USED	-	-	-
*81.7% of IX trips are of residential origin						

Table 2.2 Selected Trip Purposes for Work VMT

Trip Purpose Categories (SBCAG RTDM)		Mode Type				
		Drove Alone (DA)	Shared Ride (SR)	Transit	Walk	Bike
HBW	Home based work	USED	USED	-	-	-
HBS	Home based shop	-	-	-	-	-
HBSC	Home based K-12	-	-	-	-	-
HBO	Home based other	-	-	-	-	-
NHBO	Non-home based other	-	-	-	-	-
NHBW	Non-home based work	-	-	-	-	-
VIS	Visitor	-	-	-	-	-
IX*	Internal to External	USED	USED	-	-	-
*81.7% of IX trips are of residential origin						

2.2.2 City of Goleta Travel Model

The City of Goleta has developed its' own Citywide travel demand model for planning purposes. Model applications have included: General Plan analyses and tracking, development and periodic updates of the Capital Improvement Program and the city-wide Developer Impact Fee program; and for generating forecasts for traffic impact studies related to discretionary development and infrastructure improvements. The model encompasses the City and surrounding portions of the Goleta Valley (unincorporated Santa Barbara County), including Isla Vista, the UC Santa Barbara campus, the Santa Barbara Airport, and a portion of the City of Santa Barbara. The Goleta Travel Model is run in the VISUM software platform, has a base year of 2015 and forecast year of 2040, and is a single-mode (automobile) AM/PM peak hour model. The land use dataset within the Goleta

Travel Model is consistent with the City's General Plan Land Use Element and is utilized to forecast and evaluate future traffic conditions.

Since the Goleta Travel Model domain is limited to the immediate area, it currently does not account for the full trip lengths that either begin or end outside the modeling area. However, the model will be used to discern the influence of non-City land uses within and immediately adjacent to Goleta, as well as to identify sub-areas within Goleta that fall below or above the average boundary-based trip length by trip purpose. These analyses will help inform the overall analysis as well as inform potential modifications to the Goleta model itself.

2.2.3 LEHD Data

Journey-to-work data is available from the Longitudinal Employer-Household Dynamics (LEHD) program. The primary source of data used in the LEHD program is the enhanced Quarterly Census of Employment and Wages (QCEW) microdata files obtained from each participating Local Employment Dynamics (LED) state. The employer-based QCEW data is merged with additional worker-based administrative data collected by the US Census Bureau to create integrated employer-worker data, available through two different databases, Quarterly Workforce Indicators (QWI) and LEHD Origin-Destination Employment Statistics (LODES).

Unlike sample-based surveys (such as the U.S. Census's American Community Survey or CTPP), the LEHD data provides a nearly complete enumeration of home-to-work flows covering over 90% of all workers and employers in the United States[3]. The LEHD data does not contain details on the work trips such as mode choice, route, or travel times. The LEHD data does not include federal workers, self-employed or the military, and workplace location is assigned algorithmically for people who work for a business with multiple locations in a City. Since the SBCAG model provides information on mode choice, and does its own assignment of trips, the additional commute and socio-economic data from CTPP is not needed to determine VMT. The LEHD data provides many more origin-destination pairs than collected through sampled data, and provides sufficient data for home-to-work flows.

Work Destination (the primary work location of Goleta residents) and Home Origin (where workers who work in Goleta reside) data were downloaded from Longitudinal Employer-Household Dynamics (LEHD) OnTheMap for year 2017.

2.2.4 Development of LEHD Model within SBCAG RTDM

The LEHD LODES data was utilized within the SBCAG model to determine Home-Based-Work trips and estimate baseline "Work" VMT for comparison to the Work VMT generated by the SBCAG model. 2017 LEHD (LODES) data was downloaded by census block level, aggregated by TAZ, and then imported into an origin-destination matrix within the SBCAG model software (TransCAD). This

[3] "Improving Employment Data for Transportation Planning", NCRHP 08-36, Task 098. Cambridge Systematics, Inc. September 2011. http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36(98)_FR.pdf

origin-destination trip matrix was used to calculate “internal” VMT within Santa Barbara County utilizing the model network, and “external” VMT within San Luis Obispo County and Ventura County. If one end of the work trip was in an adjacent county, then the work trip was assigned to the logical SBCAG external station. An approximation of the "external" portion of the trip's VMT, and total trip length, was estimated by using the distance (via roadway network travel outside of the model) to the SBCAG external station. The "distance" of each external station was modified to account for the average distance travelled before entering and after leaving the County. This methodology was used to best capture the full length of vehicle trips.

Utilizing the LEHD data allows for a comparison of SBCAG’s HBW trip purposes and calculated Work VMT. Since the LEHD data only provides home-to-work or work-to-home information, other home-based trips (HBx) cannot be calculated utilizing the LEHD data, and the model’s residential-generated VMT per capita is not compared to the LEHD data.

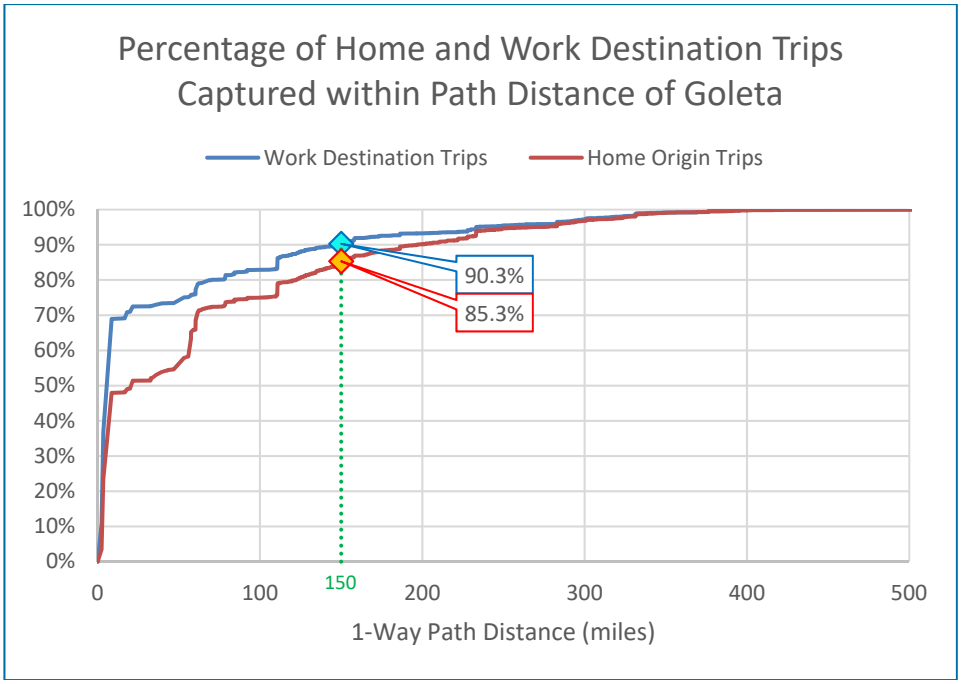
2.2.5 Shortest-Path GIS Analysis Methodology

Shortest path analysis was performed using the “Shortest path (point to layer)” network analysis within GIS software, with the centroid of the City as the start point, and the path type set to “Shortest”. The trip ends were defined as all centroids of each census designated place within California, including both incorporated Cities and unincorporated communities. The roadway network utilized included primary and secondary road classifications within the State, excluding all local classes of roadways. With these settings, the travel distances from Goleta based on the shortest path analysis was estimated for each census designated place (CDP).

The home-to-work flows from LEHD are then superimposed on the routes and resulting distances to calculate VMT for each CDP. The associated travel distance of each path (in miles), was output and multiplied by the number of trips, based on the LEHD data, to each destination, and then aggregated to obtain the total VMT for both Work Destination (Residential VMT) and Home Origin (Work VMT). The total VMT for Work Destination trips was divided by the population of Goleta, and the total VMT for Home Origin trips was divided by the total number of jobs in Goleta to obtain the average VMT per capita and per employee respectively.

A small proportion of work locations reported by LEHD may not represent the actual physical locations where workers work (i.e. telecommuting). 2018 US Census data shows that only 2.5% of commuters have a journey-to-work of over 60 minutes. Based on the LEHD data, around 25% of journey-to-work trips are longer than 60 minutes (or approximately 60 miles), indicating an overrepresentation of long trips. Therefore, the VMT based on the LEHD data was calculated utilizing only the trip paths within a 150-mile buffer, thus minimizing errors and outliers in the LEHD data that inflate the average VMT per capita. The 150-mile buffer spans roughly from Los Angeles to San Luis Obispo, and based on professional opinion, best represents an enumeration of actual commute distances while accounting for errors and outliers in the LEHD data. Figure 2.1 shows that a 150-mile buffer captures 90.3% of Work Destination trips and 85.3% of Home Origin trips.

Figure 2.1 Percentage of Work and Home Origin Trips Captured within Buffer Distance of Goleta



2.3 CEQA Baseline Considerations

Under CEQA, project impacts must be evaluated by comparing environmental conditions after project implementation to conditions at a point in time referred to as the baseline. The CEQA Guidelines Section 15125 contains the following guidance (in part) for establishing the baseline:

> *An EIR must include a description of the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. […] The purpose of this requirement is to give the public and decision makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts.*

The CEQA Guidelines establish the baseline as the environmental condition that exists at the time the notice of preparation is published or environmental analysis is commenced, from both a local and regional perspective. However, a lead agency may define the baseline by referencing historic conditions, as long as substantial evidence is provided that such a baseline is necessary to provide the most accurate picture practically possible of the project's impacts given that existing conditions change or fluctuate over time.

The update to the City's Environmental Thresholds Guidelines will need to ensure that each VMT analysis prepared in the future provides substantial evidence for the applicability of older baseline data. Updating the baseline VMT estimates concurrent with an update to the SBCAG RTP/SCS and RTDM, as recommended in this report, will best assure that the VMT thresholds remain defensible under CEQA.

2.4 Draft Baseline VMT Analysis Findings

2.4.1 SBCAG RTDM

Based on the methodology for estimating Baseline VMT as described within this section, Table 2.3 presents a summary of the Baseline VMT analysis for inbound work trips and outbound residential trips for Goleta, utilizing the SBCAG RTDM model. The results show Residential and Work VMT from the SBCAG model, and the results of utilizing the LEHD data for the Work trips and associated Work VMT to compare to the results of the model.

As shown, the total Work trips from the SBCAG model (23,442) are slightly higher than the LEHD data (21,454). As previously mentioned, the LEHD data does not include federal workers, self-employed or the military. The LEHD data presents comparable results to the SBCAG model for work trips. The total Work VMT per employee for Goleta was calculated based on the employment for the City of 17,229 employees (from 2010 base year model), and the total Residential VMT per capita was calculated based on the City's population of 30,847 (from 2010 base year model).

City of Goleta Baseline VMT:

- Work VMT (SBCAG model) = 16.77 per employee
- Work VMT (LEHD model) = 15.73 per employee
- Residential VMT = 19.75 per capita

The total VMT metrics countywide (Santa Barbara) was also calculated utilizing the SBCAG model:

Countywide Baseline VMT:

- Work VMT = 16.19 per employee
- Residential VMT = 15.95 per capita

The VMT results for the City of Goleta present higher Residential VMT per capita, and similar Work VMT (SBCAG model-based).

Table 2.3 SBCAG RTDM Baseline Trips and VMT Results

	Inbound Work Trips (Home Origin of Goleta Workers)				Outbound Residential Trips (Work Destination of Goleta Residents)		Avg. Trip Length		
	LEHD		SBCAG		SBCAG (All HB)		HBW		All HB
Geography	**VMT**	**Trips**	**VMT**	**Trips**	**VMT**	**Trips**	**LEHD**	**SBCAG**	**SBCAG**
Goleta	17,479	6,550	12,338	5,222	39,972	18,132	2.67	2.36	2.20
Unincorporated Goleta*	6,783	1,590	9,072	2,355	28,166	7,770	4.27	3.85	3.63
Isla Vista	7,859	2,262	7,416	2,647	19,419	7,648	3.47	2.80	2.54
Santa Barbara	68,641	6,974	62,446	6,816	140,427	15,772	9.84	9.16	8.90
Unincorporated Santa Barbara*	3,422	490	6,242	1,068	16,893	3,081	6.98	5.84	5.48
Montecito	5,867	388	6,652	455	13,515	930	15.12	14.63	14.54
Carpinteria	7,842	354	14,272	673	24,663	1,166	22.15	21.21	21.14
Buellton	2,561	76	12,861	373	20,418	597	33.69	34.51	34.22
Lompoc	4,883	108	39,619	875	40,982	911	45.21	45.27	44.99
Vandenberg Villa	397	8	6,262	127	6,020	122	49.57	49.32	49.21
Santa Maria	20,670	340	24,278	382	23,632	371	60.79	63.54	63.76
Unincorporated Santa Maria	3,706	64	13,113	222	13,111	221	57.90	59.06	59.28
Other SB County	12,067	476	42,746	1,464	61,166	2,430	25.35	29.21	25.17
Ventura	16,348	394	23,407	588	118,601	2,972	41.49	39.8	39.90
Oxnard	13,541	284	4,355	95	22,100	483	47.68	45.67	45.77
Thousand Oaks	15,185	234	103	2	523	8	64.89	62.93	63.03
Camarillo	8,607	158	544	10	2,764	53	54.47	52.51	52.61
Simi Valley	3,428	48	6	0	29	0	71.41	71.20	71.29
Other Ventura County	20,858	344	831	17	4,226	88	60.63	47.69	47.79
San Luis Obispo City	9,289	104	218	2	1,128	13	89.32	89.58	89.77
Other SLO County	21,553	208	2,218	29	11,461	148	103.62	77.47	77.66
Total	**270,982**	**21,454**	**289,000**	**23,422**	**609,217**	**62,916**	**12.63**	**12.34**	**9.68**
Base Year Employment:	17,001				**Base Year Population:**		31,116		
VMT per Employee or per Capita	**15.94**		**17.00**		**19.58**				

*"Unincorporated Goleta" includes the Santa Barbara Airport and the surrounding Goleta Valley. "Unincorporated Santa Barbara" includes areas north and west of the City (Hope Ranch and Mission Canyon).

2.4.2 Shortest Path Analysis

Table 2.4 presents the top twenty locations where Goleta residents work (Work Destination), with locations that fall outside the 150-mile buffer highlighted in yellow. As shown in Table 2.4, the top job locations of Goleta residents (other than Goleta) are Santa Barbara (4,189 trips), Isla Vista (1,409 trips), and Los Angeles (380 trips). Table 2.5 presents the top twenty locations where Goleta workers live (Home Origin), with locations that fall outside the 150-mile buffer highlighted in yellow. As shown in Table 2.5, the top Work Destinations (other than Goleta) are Santa Barbara (4,158 trips), Lompoc (871 trips), and Isla Vista (581 trips). 3,408 trips were made within Goleta, having an average internal trip length of 3.5 miles.

Table 2.4 Top 20 Work Destinations of Goleta Residents

Location	Miles	Home Jobs	Home VMT
Santa Barbara	8.54	4,189	71,576.60
Goleta	3.50	3,408	23,856.00
Isla Vista	2.36	1,409	6,644.16
Los Angeles	110.77	380	84,187.15
Montecito	18.02	227	8,182.03
San Buenaventura (Ventura)	53.22	214	22,776.25
Santa Maria	61.62	202	24,895.75
Carpinteria	21.59	201	8,680.29
Oxnard	60.37	178	21,491.56
Thousand Oaks	78.78	122	19,221.99
Camarillo	68.54	90	12,336.86
Lompoc	57.44	61	7,008.05
Simi Valley	84.21	56	9,431.59
San Luis Obispo	92.21	54	9,958.18
Buellton	39.36	52	4,092.96
Other Locations	≤150 mi	953	193,355.81
Total (150-mi)	-	11,796	527,695.25
VMT per Capita			16.96
San Diego	233.18	77	35,909.79
San Jose	283.00	75	42,449.64
San Francisco	331.33	68	45,061.47
Bakersfield	186.19	58	21,598.12
Irvine	158.23	53	16,772.20
Other Locations	>150 mi	939	1,005,666.14
Total (no buffer)	-	13,066	1,167,457.37
VMT per Capita			37.52

Table 2.5 Top 20 Home Origins of Goleta Workers

Location	Miles	Work Jobs	Work VMT
Santa Barbara	8.54	4,158	71,046.91
Goleta	3.50	3,408	23,856.00
Lompoc	57.44	871	100,065.74
Isla Vista	2.36	581	2,739.72
San Buenaventura (Ventura)	53.22	554	58,962.82
Los Angeles	110.77	542	120,077.46
Oxnard	60.37	450	54,332.60
Santa Maria	61.62	397	48,928.78
Carpinteria	21.59	381	16,453.69
Orcutt	57.49	305	35,071.33
Montecito	18.02	153	5,514.76
Buellton	39.36	151	11,885.34
Solvang	35.64	128	9,124.71
Thousand Oaks	78.78	126	19,852.22
Santa Ynez	32.77	111	7,274.17
Vandenberg Village	58.70	105	12,327.92
Other Locations	≤150 mi	2,081	428,736.73
Total (150-mi)	-	14,502	1,026,250.89
VMT per Employee			60.36
San Diego	233.18	218	101,666.69
Bakersfield	186.19	118	43,941.01
San Jose	283.00	109	61,693.48
Other Locations	>150 mi	2,054	574,905.90
Total (no buffer)	-	17,001	2,237,255.08
VMT per Employee			131.60

Figure 2.2 and Figure 2.3 on the following pages present the distributions of Work Destination trips and Home Origin trips respectively along the shortest paths between Goleta and other CDP's within the 150-mile path distance buffer. The CDP's included in these maps account for the vast majority of Work Destination and Home Origin trips. Paths to destinations with fewer than 10 trips have been omitted. Table 2.6 presents a summary of the results of the Shortest Path analysis, and compares the results both with and without the 150-mile buffer. As shown, with the 150-mile buffer, Residential VMT for Goleta is 16.19 per capita, and Work VMT is 58.96 per employee. These metrics represent daily round-trip commute journeys to work.

Table 2.6 Summary of Goleta VMT

Population (Live in Goleta)*	31,116	
Number of Jobs (Work in Goleta)	17,001	
VMT Metric	Goleta (All Trip Ends)	Goleta (150-mile Buffer)
Residential VMT	1,167,457	527,695
Residential VMT per Capita	37.52	16.96
Work VMT	2,237,255	1,026,251
Work VMT per Employee	131.60	60.36

Figure 2.2 Work Destinations of Goleta Residents (Outbound Trips), 150-mile Buffer

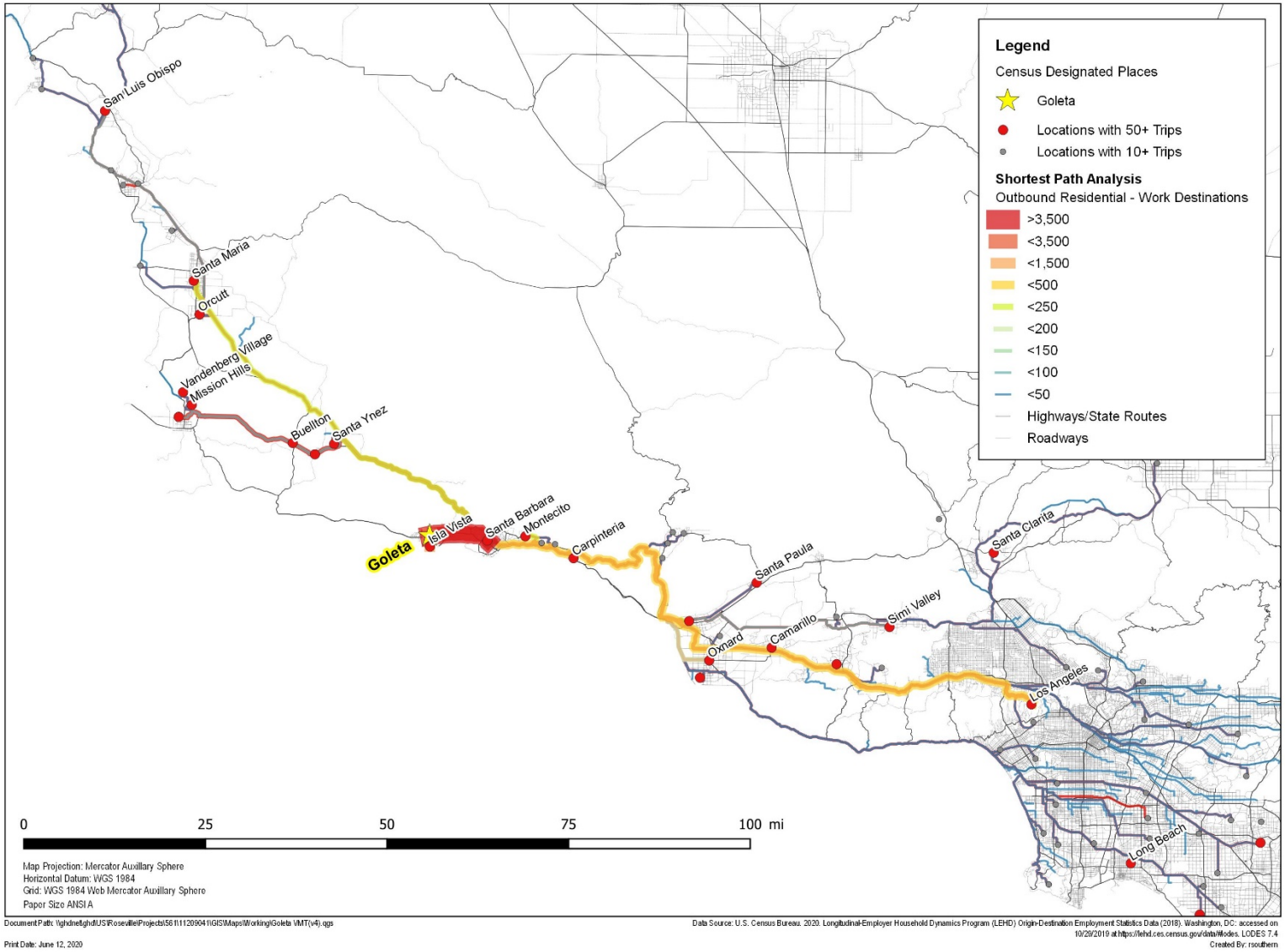
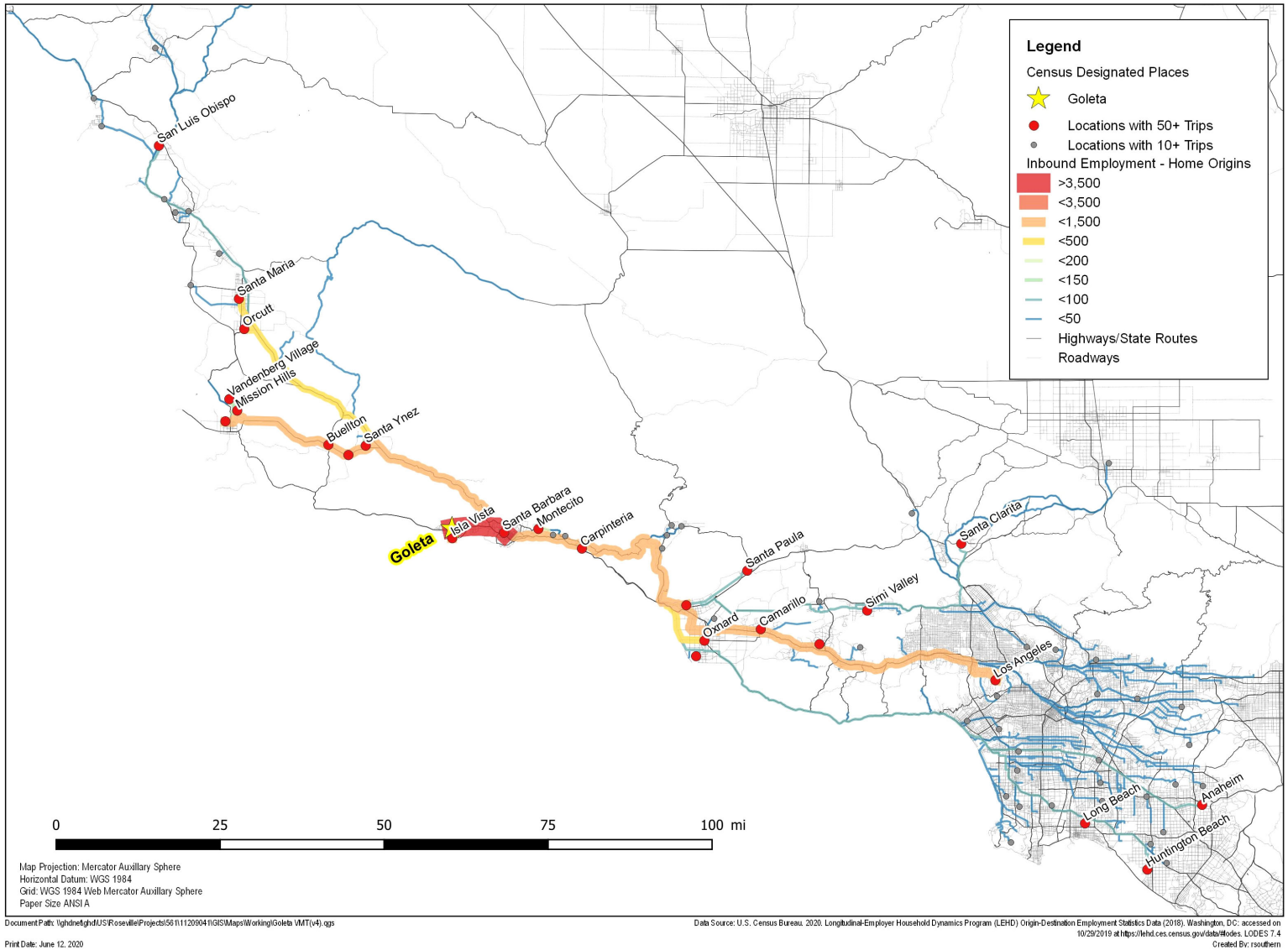


Figure 2.3 Home Origins of Goleta Employees (Inbound Trips), 150-mile Buffer



2.4.3 Goleta Model Analysis

As part of the Goleta Developer Fee Program update, the Goleta model zone structure was organized into "districts" that reflect the following geographic divisions:

1. City of Goleta
2. City of Goleta Old-Town Area
3. City of Santa Barbara Airport Specific Plan (labelled as SB Old Town)
4. County Old-Town[4]
5. County
6. UCSB 35% (student housing; 35% on campus, 65% in County)
7. UCSB
8. Santa Barbara Airport
9. Santa Barbara East
10. External

MZ HBW VMT	383,910.2
MZ HBO VMT	637,297.7
MZ HBC VMT	92,600.0
MZ NHB VMT	1,222,984.6
MZ HBW Trips	93,341.6
MZ HBO Trips	179,740.7
MZ HBC Trips	31,572.3
MZ NHB Trips	511,988.9
Total VMT	2,336,792.0
Goleta VMT	907,644.0
HPMS VMT Goleta	
HBW Trip Length	4.11
HBO Trip Length	3.55
HBC Trip Length	2.93
NHB Trip Length	2.39

Areas 1 and 2 combined make up the City of Goleta. Areas 3, 8 and 9 combined make up the City of Santa Barbara portion of the City's modeling domain. Areas 4 and 5 and a portion of 6 combined make up the County of Santa Barbara. Area 7 and a portion of Area 6 is UCSB. A key consideration is the trip length characteristics of these areas, and to what degree they may influence the City of Goleta's VMT baseline estimate or average trip length estimates. A select zone analysis was performed for each "district" listed above to determine the daily VMT generated by each area, and their average trip length characteristics by trip purpose. The AM/PM peak hour boundary-based VMT estimates generated by the Goleta Model were converted to daily VMT estimates based on factors documented in the National Cooperative Highway Research Program (NCHRP) Report 365 and NCHRP Report 716. Note that, given the constrained nature of the model network, artificially low average trip lengths are generated. The results of this analysis are provided in Table 2.7 to Table 2.10 and summarized above.

As shown, the average trip lengths do vary across these jurisdictional "islands". This suggests that these "islands" should be controlled for (i.e., excluded) as part of this analysis. Using the City-wide average trip length by trip purpose and performing a select zone analysis for each Goleta Model Traffic Analysis Zone (TAZ) allows one to see areas of the City that fall above or below the City-wide average trip length by trip purpose. This information shows areas of the City that generate relatively low VMT relative to the City-wide average (grey-light blue-dark blue) and areas that exceed the City-wide average (yellow-gold-red). This information can be used to develop geographic-based screening criteria by land use development type. Like information is generated using the SBCAG model but is based on the full trip length.

[4] County Old Town refers to a small unincorporated area to the east of South Fairview Avenue near James Fowler Road that falls outside the City limits.

Figure 2.4 Goleta Model Sub-Areas

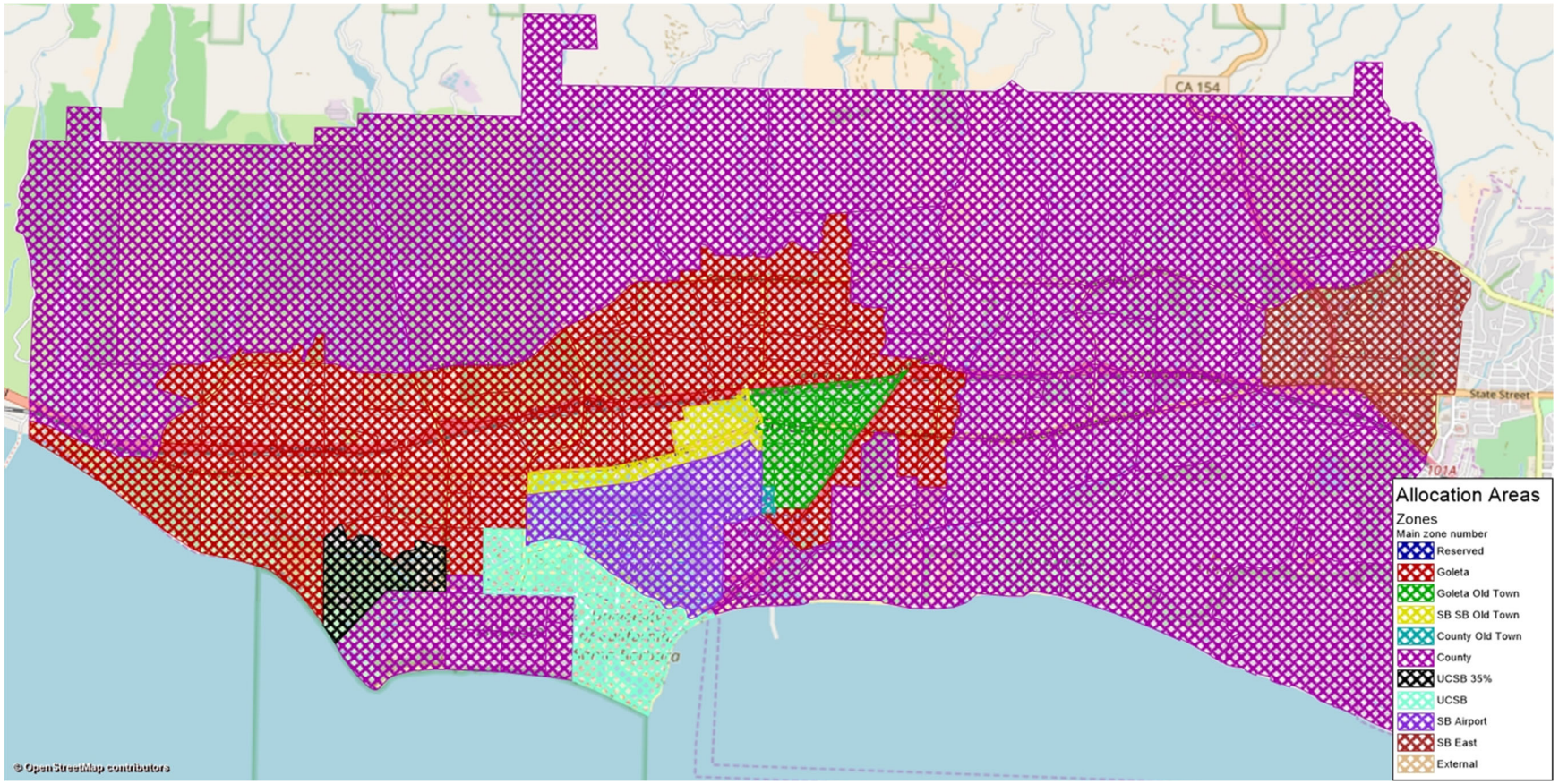


Table 2.7 Home-Based Work Average Trip Length by District

	VMT	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	46,892.6	5,706.5	829.9	0.0	34,527.1	0.0	5,122.6	673.9	8,585.6	39,593.0
2	City of Goleta Old Town	6,626.4	433.8	74.5	0.0	6,075.4	0.0	608.5	84.7	1,578.9	6,514.1
3	SB Airport Specific Plan	1,050.1	92.7	0.3	0.0	1,105.4	0.0	3.8	0.4	262.6	1,250.3
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	30,991.7	4,274.3	849.3	0.0	15,356.8	0.0	5,782.1	862.8	5,483.2	17,196.9
6	UCSB - 35%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	UCSB	6,952.6	695.7	1.7	0.0	8,447.0	0.0	0.0	0.0	2,022.9	11,506.1
8	SB Airport	757.5	88.8	0.3	0.0	1,067.9	0.0	0.0	0.0	244.0	1,066.0
9	SB East	7,767.0	1,150.8	208.8	0.0	5,154.1	0.0	1,417.1	209.1	1,278.4	3,543.8
10	External	39,880.5	5,116.9	920.5	0.0	21,526.3	0.0	8,580.8	832.0	4,983.0	0.0
	Trips	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	17,265.6	2,105.2	284.6	0.0	8,617.1	0.0	1,294.1	168.0	1,311.4	5,498.0
2	City of Goleta Old Town	2,384.5	524.5	51.4	0.0	1,949.2	0.0	170.1	41.0	295.2	1,123.2
3	SB Airport Specific Plan	352.3	63.8	0.3	0.0	288.8	0.0	1.1	0.2	41.3	187.5
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	7,664.6	1,401.0	226.3	0.0	5,591.9	0.0	1,291.7	196.6	1,721.0	3,924.5
6	UCSB - 35%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	UCSB	1,761.7	189.8	0.5	0.0	1,774.5	0.0	0.0	0.0	265.1	1,448.8
8	SB Airport	190.2	43.1	0.2	0.0	232.4	0.0	0.0	0.0	35.9	147.4
9	SB East	1,191.4	226.2	34.4	0.0	1,625.0	0.0	189.2	32.4	981.7	1,817.3
10	External	5,491.9	889.0	138.4	0.0	4,935.4	0.0	1,081.5	116.7	2,465.4	0.0
	Trip Lengths	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	2.72	2.71	2.92		4.01		3.96	4.01	6.55	7.20
2	City of Goleta Old Town	2.78	0.83	1.45		3.12		3.58	2.06	5.35	5.80
3	SB Airport Specific Plan	2.98	1.45	0.85		3.83		3.35	1.54	6.35	6.67
4	County Old Town										
5	County	4.04	3.05	3.75		2.75		4.48	4.39	3.19	4.38
6	UCSB - 35%										
7	UCSB	3.95	3.67	3.46		4.76				7.63	7.94
8	SB Airport	3.98	2.06	1.44		4.60				6.80	7.23
9	SB East	6.52	5.09	6.06		3.17		7.49	6.46	1.30	1.95
10	External	7.26	5.76	6.65		4.36		7.93	7.13	2.02	5.81

Table 2.8 Home-Based Other Average Trip Length by District

	VMT	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	56,254.2	6,202.2	1,351.6	0.0	20,216.7	63.5	3,142.8	764.8	1,693.5	108,335.8
2	City of Goleta Old Town	4,822.4	2,136.9	209.8	0.0	4,505.1	4.7	284.6	169.6	439.1	23,176.1
3	SB Airport Specific Plan	857.5	146.9	11.8	0.0	751.7	1.8	31.8	3.5	66.8	4,286.7
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	23,658.6	5,771.8	1,111.6	0.0	22,723.9	12.1	3,321.8	1,051.6	3,841.3	75,838.9
6	UCSB - 35%	54.5	5.2	1.8	0.0	7.4	0.0	7.3	0.8	0.6	36.6
7	UCSB	1,234.1	129.7	27.2	0.0	1,168.4	2.0	506.3	14.1	119.3	8,138.7
8	SB Airport	410.0	92.5	3.4	0.0	568.5	0.9	24.8	0.0	47.4	4,185.7
9	SB East	2,013.8	614.7	108.4	0.0	3,341.0	0.7	318.1	107.6	3,969.9	14,233.0
10	External	97,398.0	20,466.8	4,009.6	0.0	66,331.9	85.9	15,048.0	3,016.6	12,183.4	0.0
	Trips	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	33,656.8	2,594.5	508.8	0.0	7,310.3	46.7	856.7	208.9	273.1	15,170.4
2	City of Goleta Old Town	2,118.1	3,396.9	195.0	0.0	1,601.1	1.3	82.1	90.5	84.0	4,015.0
3	SB Airport Specific Plan	311.2	145.9	14.5	0.0	217.4	0.6	10.9	2.5	11.1	665.6
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	8,838.5	2,096.7	321.5	0.0	15,399.3	10.3	936.6	248.3	1,738.5	17,767.3
6	UCSB - 35%	42.3	1.3	0.6	0.0	5.4	0.0	3.0	0.2	0.1	4.3
7	UCSB	373.8	37.0	9.4	0.0	335.9	0.8	470.8	4.7	15.7	1,027.1
8	SB Airport	113.7	55.2	2.6	0.0	133.6	0.2	9.6	0.0	7.1	582.0
9	SB East	341.0	124.9	18.6	0.0	1,539.8	0.1	42.7	16.9	3,547.0	7,628.4
10	External	13,821.7	3,585.1	613.6	0.0	15,098.3	10.1	1,897.9	424.9	6,846.1	0.0
	Trip Lengths	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	1.67	2.39	2.66		2.77	1.36	3.67	3.66	6.20	7.14
2	City of Goleta Old Town	2.28	0.63	1.08		2.81	3.57	3.47	1.87	5.23	5.77
3	SB Airport Specific Plan	2.76	1.01	0.81		3.46	2.92	2.91	1.39	6.03	6.44
4	County Old Town										
5	County	2.68	2.75	3.46		1.48	1.17	3.55	4.24	2.21	4.27
6	UCSB - 35%	1.29	4.00	2.93		1.38		2.42	4.75	8.59	8.50
7	UCSB	3.30	3.51	2.88		3.48	2.46	1.08	2.99	7.59	7.92
8	SB Airport	3.61	1.68	1.33		4.26	4.15	2.58		6.71	7.19
9	SB East	5.91	4.92	5.83		2.17	8.62	7.46	6.36	1.12	1.87
10	External	7.05	5.71	6.53		4.39	8.50	7.93	7.10	1.78	6.17

Table 2.9 Home-Based College Average Trip Length by District

	VMT	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	1,873.1	18.2	0.0	0.0	93.6	1.4	535.8	0.0	18.9	267.3
2	City of Goleta Old Town	22.5	338.1	0.0	0.0	24.4	0.0	74.7	0.0	6.1	45.1
3	SB Airport Specific Plan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	169.6	18.3	0.0	0.0	1,955.7	2.7	650.7	0.0	121.9	411.7
6	UCSB - 35%	18.4	0.4	0.0	0.0	2.8	15.0	18.9	0.0	0.5	5.7
7	UCSB	12,533.6	2,219.3	0.0	0.0	11,814.5	53.2	12,982.2	0.0	3,512.8	26,123.5
8	SB Airport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	SB East	5.0	1.2	0.0	0.0	40.1	0.0	89.6	0.0	650.4	80.9
10	External	1,641.1	300.3	0.0	0.0	2,627.6	2.1	9,972.0	0.0	1,239.3	0.0
	Trips	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	1,811.7	9.4	0.0	0.0	39.1	1.6	133.8	0.0	3.2	37.7
2	City of Goleta Old Town	11.5	358.5	0.0	0.0	9.1	0.0	20.8	0.0	1.2	7.9
3	SB Airport Specific Plan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	81.5	6.2	0.0	0.0	1,901.9	2.8	211.4	0.0	58.3	94.2
6	UCSB - 35%	18.1	0.1	0.0	0.0	1.3	15.0	7.8	0.0	0.1	0.7
7	UCSB	3,194.6	605.3	0.0	0.0	2,724.3	21.8	12,885.2	0.0	468.0	3,279.0
8	SB Airport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	SB East	0.9	0.3	0.0	0.0	20.9	0.0	12.1	0.0	635.5	41.2
10	External	239.7	53.1	0.0	0.0	689.6	0.3	1,246.7	0.0	608.7	0.0
	Trip Lengths	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	1.03	1.93			2.39	0.89	4.00		5.86	7.09
2	City of Goleta Old Town	1.96	0.94			2.69	3.83	3.60		5.06	5.71
3	SB Airport Specific Plan										
4	County Old Town										
5	County	2.08	2.96			1.03	0.94	3.08		2.09	4.37
6	UCSB - 35%	1.01	4.16			2.11	1.00	2.42		8.43	8.53
7	UCSB	3.92	3.67			4.34	2.44	1.01		7.51	7.97
8	SB Airport										
9	SB East	5.48	4.78			1.92	8.34	7.39		1.02	1.96
10	External	6.85	5.66			3.81	8.19	8.00		2.04	

Table 2.10 Non-Home-Based Average Trip Length by District

	VMT	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	196,696.6	20,805.2	5,259.4	0.0	36,079.6	41.0	17,932.4	2,498.0	4,404.3	131,712.8
2	City of Goleta Old Town	25,327.0	19,624.3	2,605.6	0.0	7,244.1	2.5	4,521.4	1,947.5	1,165.4	28,756.7
3	SB Airport Specific Plan	4,910.8	1,859.9	923.4	0.0	834.9	0.7	648.9	226.6	124.5	3,515.5
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	56,837.3	8,947.9	1,516.0	0.0	60,519.0	12.3	12,159.4	1,377.0	10,358.5	102,921.3
6	UCSB - 35%	136.6	7.5	2.5	0.0	24.4	0.2	17.0	0.8	1.8	70.8
7	UCSB	3,674.3	684.9	172.0	0.0	1,674.6	3.5	12,608.2	165.1	193.8	8,715.2
8	SB Airport	2,703.8	1,902.4	283.5	0.0	849.3	0.3	752.4	964.2	143.1	4,057.0
9	SB East	6,324.1	1,430.1	233.6	0.0	9,379.4	0.9	1,997.6	228.4	23,997.7	30,588.0
10	External	137,842.5	25,751.4	4,973.5	0.0	67,241.4	27.8	73,602.6	4,258.0	20,980.9	0.0
	Trips	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	149,037.2	11,935.1	3,207.5	0.0	14,681.5	29.3	4,904.4	860.1	737.3	19,227.8
2	City of Goleta Old Town	14,905.3	33,772.1	2,742.6	0.0	2,828.5	0.7	1,289.8	1,278.6	222.8	4,995.8
3	SB Airport Specific Plan	3,468.6	2,126.9	1,113.7	0.0	257.4	0.2	196.8	128.4	20.9	553.4
4	County Old Town	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	County	23,151.8	3,320.1	447.0	0.0	47,530.3	8.1	3,713.5	341.1	4,945.4	24,311.0
6	UCSB - 35%	101.8	1.9	0.9	0.0	18.0	0.2	7.0	0.2	0.2	8.4
7	UCSB	1,218.0	193.9	53.7	0.0	586.1	1.5	12,524.2	60.7	25.2	1,105.7
8	SB Airport	976.4	1,458.2	167.7	0.0	234.4	0.1	311.9	986.9	21.1	564.8
9	SB East	1,043.2	279.5	38.5	0.0	4,766.1	0.1	261.5	34.7	22,902.4	16,071.0
10	External	19,895.3	4,523.5	761.0	0.0	15,844.6	3.3	9,349.5	598.7	12,695.9	0.0
	Trip Lengths	City of Goleta	City of Goleta Old Town	SB Airport SP	County Old Town	County	UCSB - 35%	UCSB	SB Airport	SB East	External
1	City of Goleta	1.32	1.74	1.64		2.46	1.40	3.66	2.90	5.97	6.85
2	City of Goleta Old Town	1.70	0.58	0.95		2.56	3.58	3.51	1.52	5.23	5.76
3	SB Airport Specific Plan	1.42	0.87	0.83		3.24	2.91	3.30	1.76	5.95	6.35
4	County Old Town										
5	County	2.45	2.70	3.39		1.27	1.51	3.27	4.04	2.09	4.23
6	UCSB - 35%	1.34	4.03	2.88		1.35	1.00	2.41	4.92	8.56	8.40
7	UCSB	3.02	3.53	3.20		2.86	2.35	1.01	2.72	7.68	7.88
8	SB Airport	2.77	1.30	1.69		3.62	4.13	2.41	0.98	6.78	7.18
9	SB East	6.06	5.12	6.07		1.97	8.62	7.64	6.59	1.05	1.90
10	External	6.93	5.69	6.54		4.24	8.52	7.87	7.11	1.65	6.03

Figure 2.5 to Figure 2.8 below present a comparison of each TAZ to each of the respective baseline averages, with yellow representing TAZ's with above-baseline average trip length and blue representing TAZ's with below-baseline average trip length. The magnitude of difference from the baseline is denoted by the graphic height and color saturation of the TAZ's.

Figure 2.5 Home-Based Work Average Trip Length by TAZ – Above or Below City-wide Average Trip Length

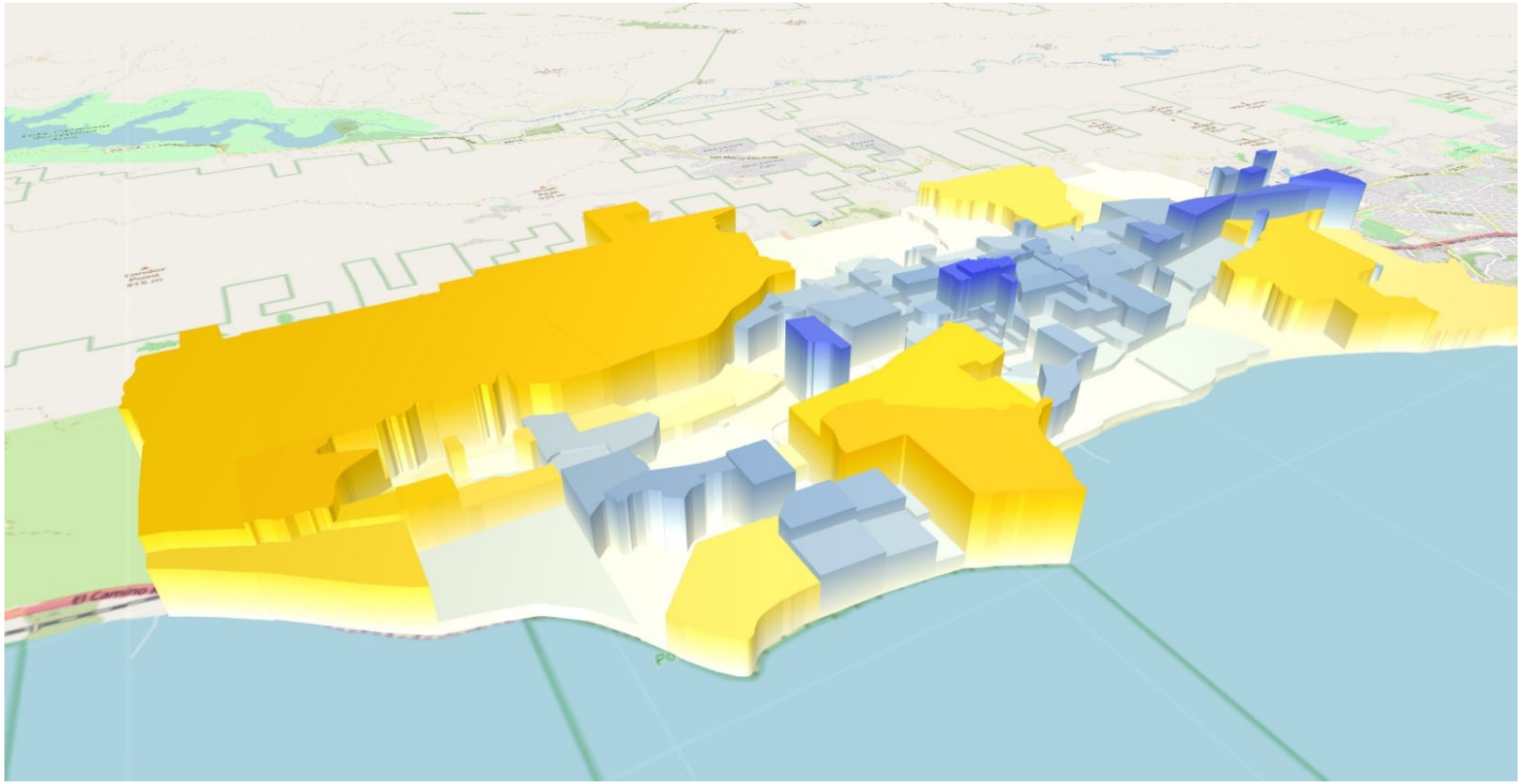


Figure 2.6 Home-Based Other Average Trip Length by TAZ – Above or Below City-wide Average Trip Length

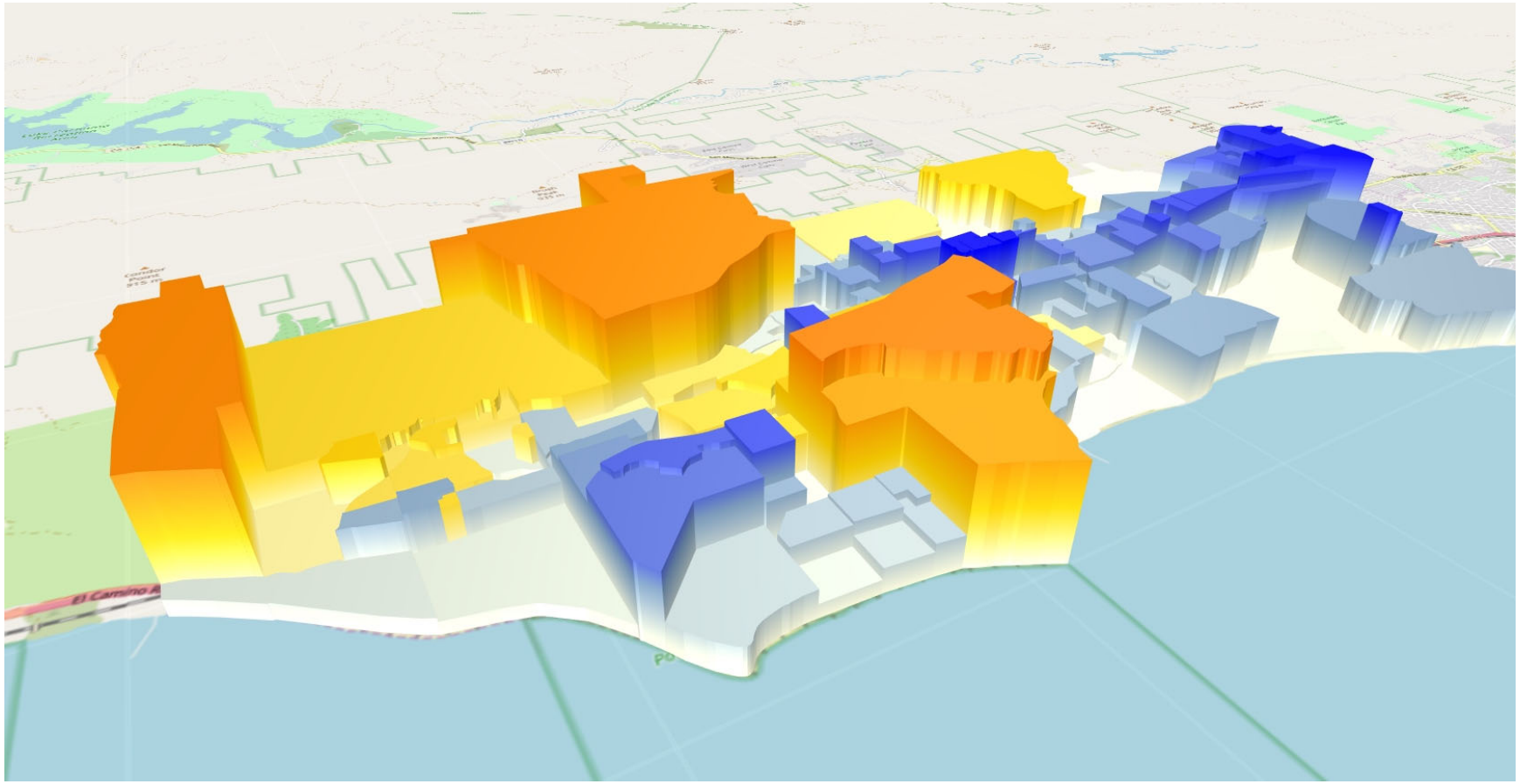


Figure 2.7 Home-Based College Average Trip Length by TAZ – Above or Below City-wide Average Trip Length

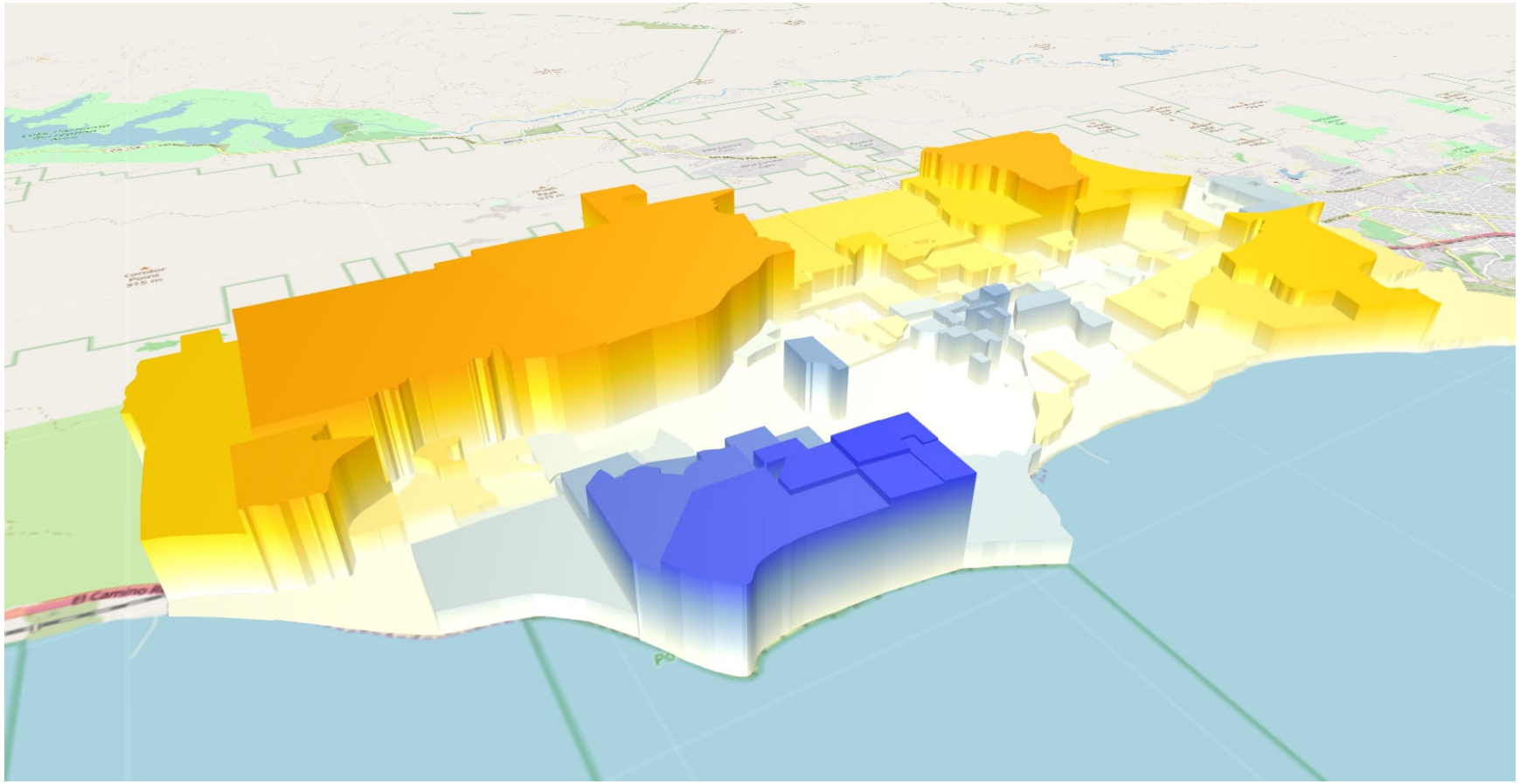
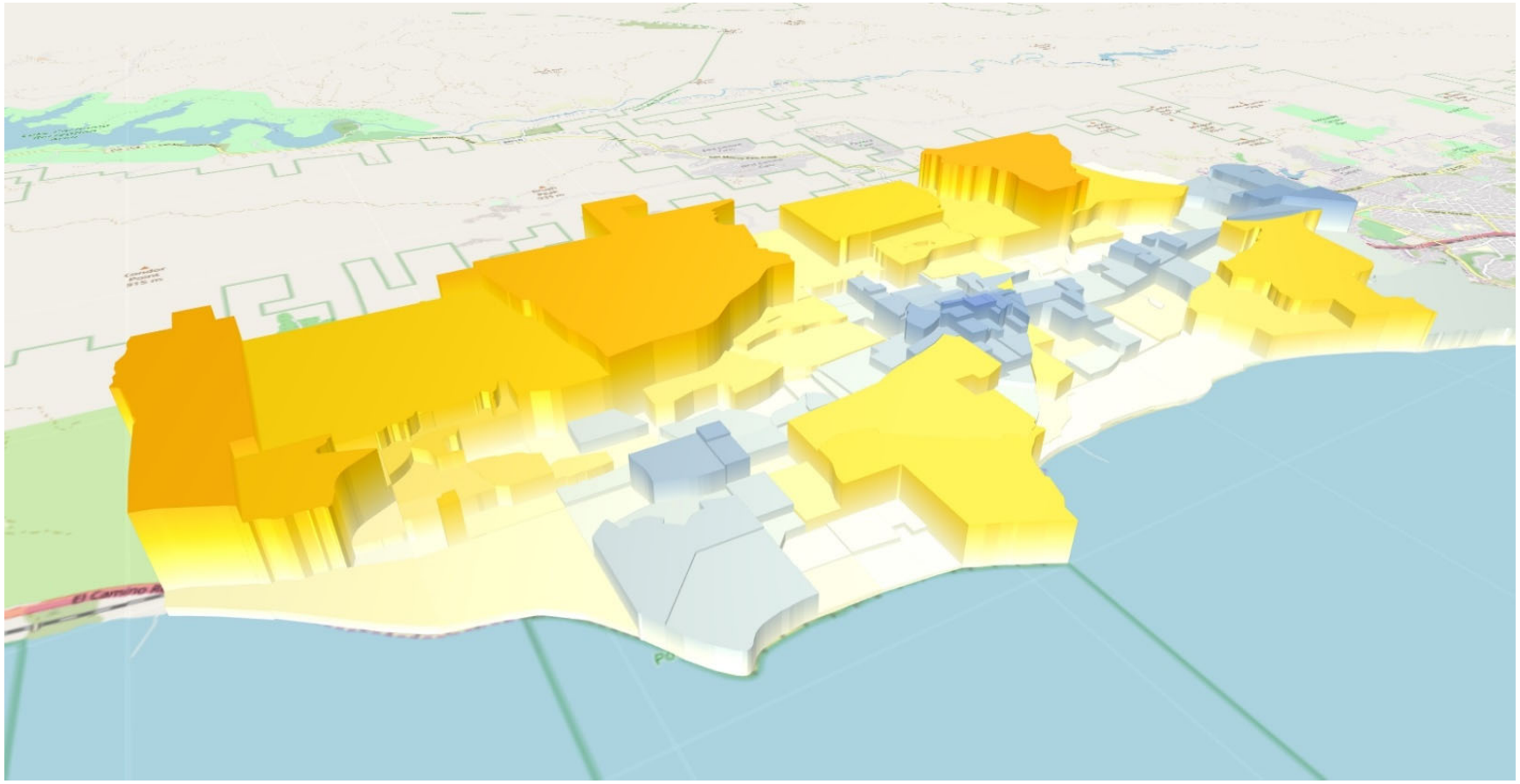


Figure 2.8 Non-Home-Based Work Average Trip Length by TAZ – Above or Below City-wide Average Trip Length



2.5 Summary & Baseline Recommendation

Table 2.11 presents a summary of the findings of the different data sources which were utilized to estimate Residential VMT per capita and Work VMT per employee. The SBCAG model is the recommended analysis tool to establish the Baseline VMT metrics.

Based on the Goleta Model analysis, all non-city islands should be controlled for as part of this analysis. This includes UCSB, Isla Visa, the Santa Barbara Airport, the Santa Barbara Airport Specific Plan area and the East Goleta Area Specific Plan. In addition, VMT factors will be developed for the internal-to-external trips in the City Model to augment these trip lengths to emulate the full trip length as generated by the SBCAG RTDM and LEHD data. The high- and low-VMT zone analysis relative to the City-wide average trip length analysis will be reanalyzed

Table 2.11 Summary of Goleta Baseline VMT

Data Source / VMT Metric	SBCAG Model City Average	SBCAG Model Countywide Average	Citywide Average based on Citywide (VISUM)	Citywide Average based on LEHD Shortest Path Analysis
Residential VMT per Capita	19.8	16.0	13.0	16.3
Work VMT per Employee (model data)	16.8	16.2	9.5	-
Work VMT per Employee (LEHD model)	15.7	-	-	58.2

2.5.1 Recommendation

GHD's recommendation is to utilize the SBCAG model and associated Sketch Planning Tool representing the SBCAG model as the mechanism for evaluating VMT, as these tools are the most accurate available. **GHD recommends establishing the City of Goleta as the baseline geography**, as baselines which include UCSB & Isla Vista sets a standard that's difficult to attain for any type of development within the City. **GHD recommends following OPR guidance for setting thresholds of significance at 15% below baseline averages for residential and work type project and a net VMT increase for all other types of projects.** The recommended baseline and thresholds are presented below:

- Work baseline of 16.8 VMT per employee
    - Work threshold: 15% below baseline of 14.3
- Residential baseline of 19.8 VMT per capita
    - Residential threshold: 15% below baseline of 16.8

2.5.2 Sketch Planning Tool

In order to improve access the tools necessary to evaluate VMT GHD in collaboration with Convergence planning has developed a sketch planning tool that replicates the results of the SBCAG model and ultimately the City's VISUM model once updates are completed. More information regarding this sketch planning tool is provided in appendix C.

2.5.3 Traffic Safety

With the change to VMT as the primary metric for project analysis there will be more focus on traffic safety analysis for intersections and segments project traffic effects. GHD has developed guidance for evaluating traffic safety which is provided in appendix D. This is provided as guidance and reference only, it's recommended that the City retain discretion in determining the scope and methodology for safety analysis based on the circumstance and conditions of each project on a case by case basis.

3. Screening Criteria

3.1 CEQA Threshold Considerations

Under CEQA, a lead agency is required to determine the significance of all environmental impacts (CEQA Guidelines Section 15064). A threshold of significance for an environmental impact defines the level of effect above which the lead agency will consider impacts to be significant, and below which it will consider impacts to be less than significant. Section 16064.7 of the CEQA Guidelines defines a threshold of significance to be:

> 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 will normally be determined to be less than significant.

Lead agencies have discretion to formulate their own significance thresholds, which can be formally adopted thresholds consistently applied to all projects. Adopting clearly established thresholds promotes predictability and consistency for the environmental review process and can increase defensibility of significance determinations in the lead agencies documents.

The VMT thresholds and screening criteria provided in this report are recommended based on the most recent guidance on VMT thresholds from the Office of Planning and Research. The VMT analysis completed for this report serve as substantial evidence for the validity of the VMT thresholds and screening criteria recommended for the City of Goleta. Specifically defining terms and parameters used in the VMT thresholds, such as locally-serving retail, will be important in ensuring that the VMT thresholds remain defensible under CEQA.

3.2 Recommended Screening Thresholds

OPR's Technical Advisory lists the following screening criteria for land use projects. These types of development projects are presumed to have a less than significant impact on vehicle miles traveled and therefore. OPR's Technical Advisory suggests that lead agencies consider screening out VMT impacts using project size, maps, transit availability, and provision of affordable housing. This section assesses the criteria and provides recommendations on how they may be applied for the City of Goleta.

A. **Small projects** that are consistent with the Sustainable Communities Strategy (SCS) or General Plan and generate or attract fewer than 110 daily trips (per CEQA). **GHD Recommends the City adopt this screening criteria.**

B. **Map-based screening** for residential and office projects located in low VMT areas, and incorporate similar features (density, mix of uses, transit accessibility). **GHD Recommends the City adopt this screening criteria.**

C. **Transit Proximity**, certain projects within ½ mile of an existing major transit stop[5] or an existing stop along a high quality transit corridor[6]. However, this will not apply if information indicates that the project will still generate high levels of VMT. **GHD recommends the City adopt this threshold.**

D. **Affordable Housing** Development in infill locations. In consultation with the City, housing projects with a minimum of 20% low and/or very low affordable deed-restricted housing units are presumed to be less than significant.

E. **Locally-serving retail projects** typically less than 50,000 square feet. **GHD Recommends the City adopt this screening criteria, but with a more conservative threshold of 10,000 square feet, to reflect the scale of retail in Goleta that may attract regional trips. GHD also recommends that the City retain discretion to determine if projects less than 10,000 square feet are locally serving appropriate on a case by case basis.**

F. **Transportation Projects** If a project would likely lead to a measurable and substantial increase in vehicle travel, the City should conduct an analysis assessing the amount of vehicle travel the project will induce. 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. **GHD recommends using VMT as the metric to evaluate transportation impacts for transportation under CEQA.**

3.3 Screening for Small Projects

OPR's Technical Advisory states that a screening threshold of 110 trips per day generally may be assumed to cause a less than significant impact, given that the project is consistent with the Sustainable Communities Strategy (SCS) or General Plan, and there is not substantial evidence that the project would generate a potentially significant level of VMT.

GHD recommends that the City establish the following policy for screening small projects.

"Projects that generate less than 110 automobile trips per day are presumed to have a less than significant VMT impact. Example single use projects that generate less than 110 daily trips based on the most current ITE Trip generation Manual include but are not limited to the following:

a) 9 Single Family Units.

b) 20 Multifamily Units.

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[5] "major transit stop" - A major transit stop is a "site containing an existing rail, a ferry terminal served by bus or rail transit service, or intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during morning and evening peak hour commute". (OPR 2018)

[6] 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.").

c) 1,000 SQFT Retail

d) 10,000 SQFT Office

e) 22,000 SQFT Industrial

3.4 Map-Based Screening

Residential and work based projects that are located in areas with existing low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Therefore these projects can be presumed to have a less-than-significant VMT impact without the need to conduct a VMT analysis. These areas where projects would be presumed to have a less-than-significant VMT impact are depicted in Figure 3.1 for work-based projects and Figure 3.2 for residential projects. These indicate where residential and work-based projects would generate an average VMT of 15% or less below the baselines and would not require a VMT analysis. It's important to emphasize that if a project is not presumed to be less than significant based on these screening maps, it does not necessarily mean that the project will have a VMT impact, only that a less than significant impact cannot be assumed and that a VMT analysis would be necessary to make that determination.

During the process of evaluating baseline methods and screening criteria, various areas were considered, including Citywide, greater Goleta area, central coast, and countywide (Santa Barbara). Appendix A includes the screening criteria memorandum which shows the various areas considered in determining the baseline and the resulting VMT metrics by TAZ.

Figure 3.1 Screening Area for Work-Based Projects

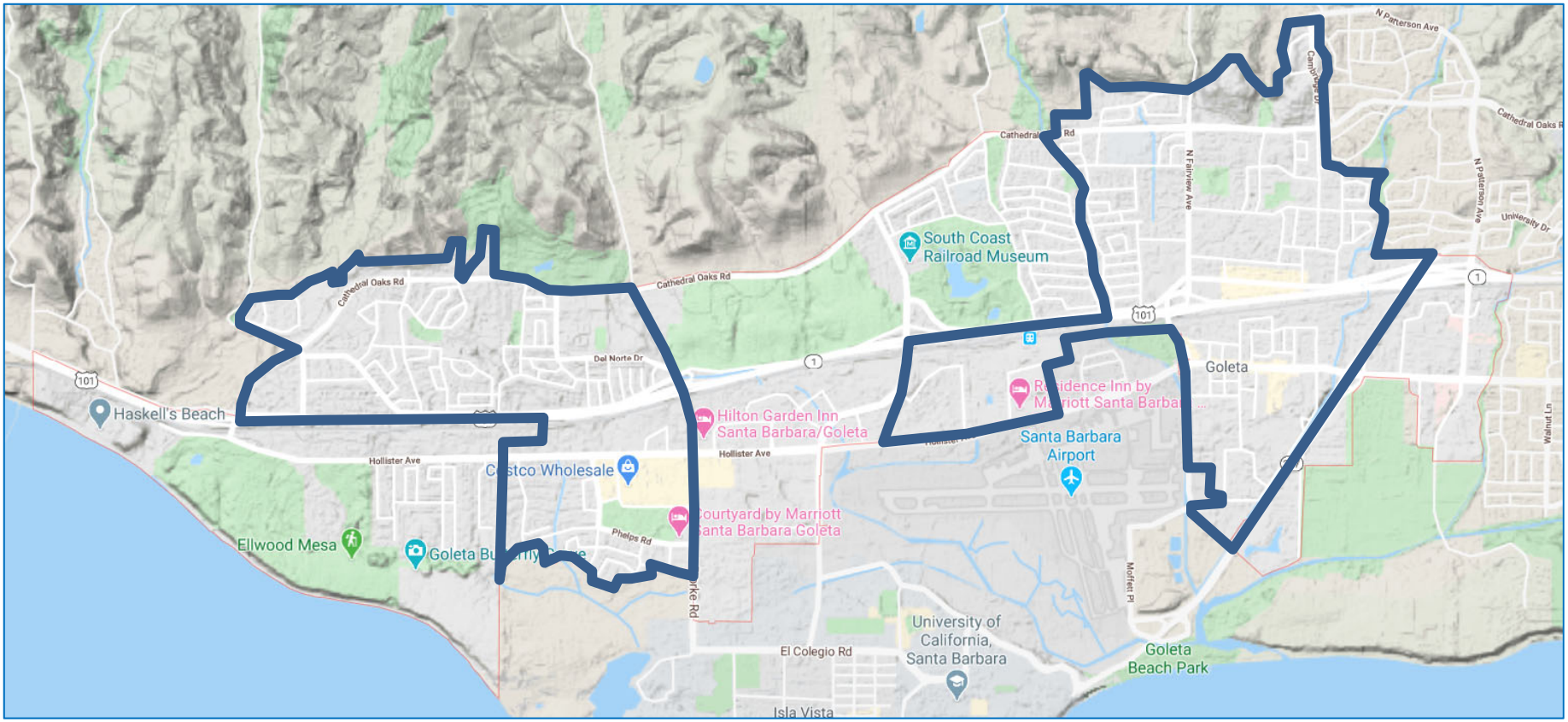
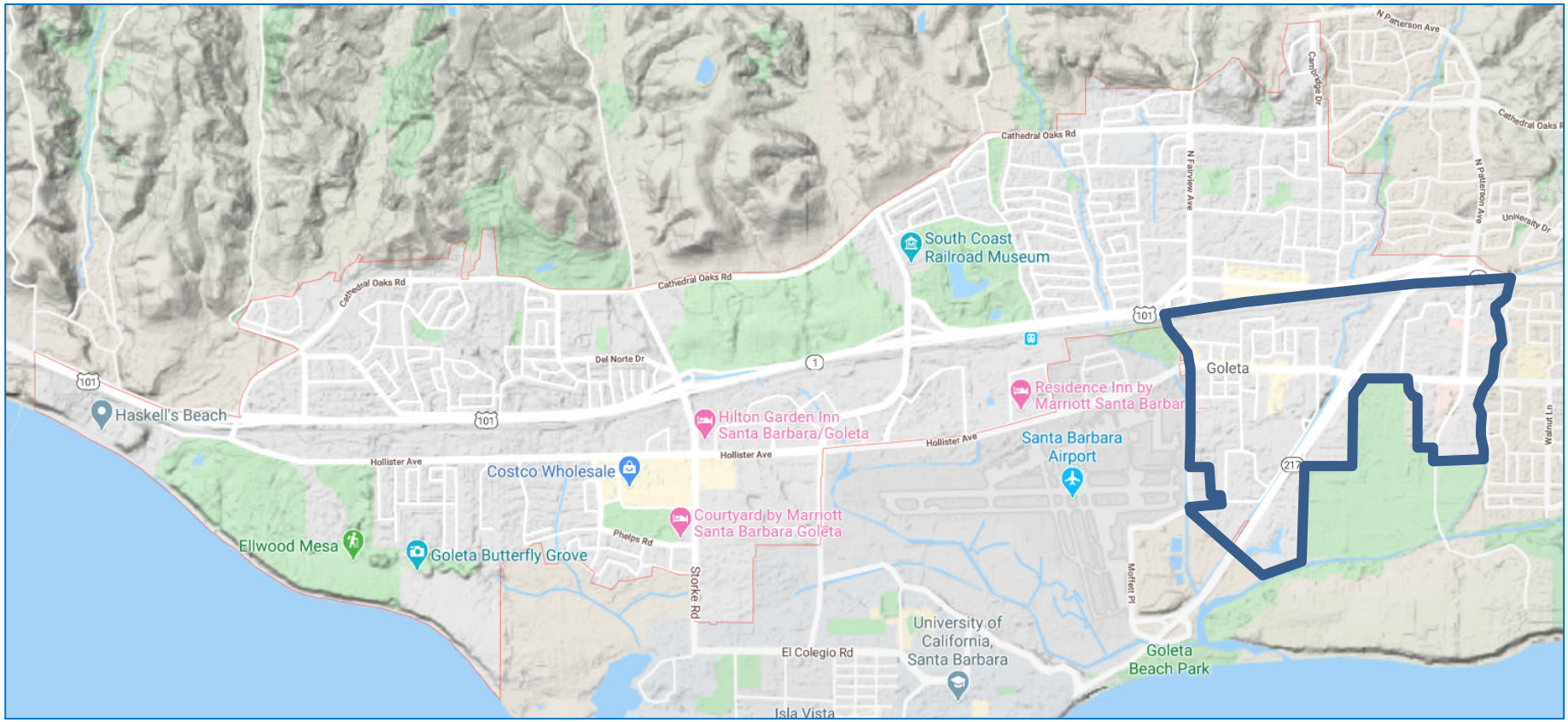
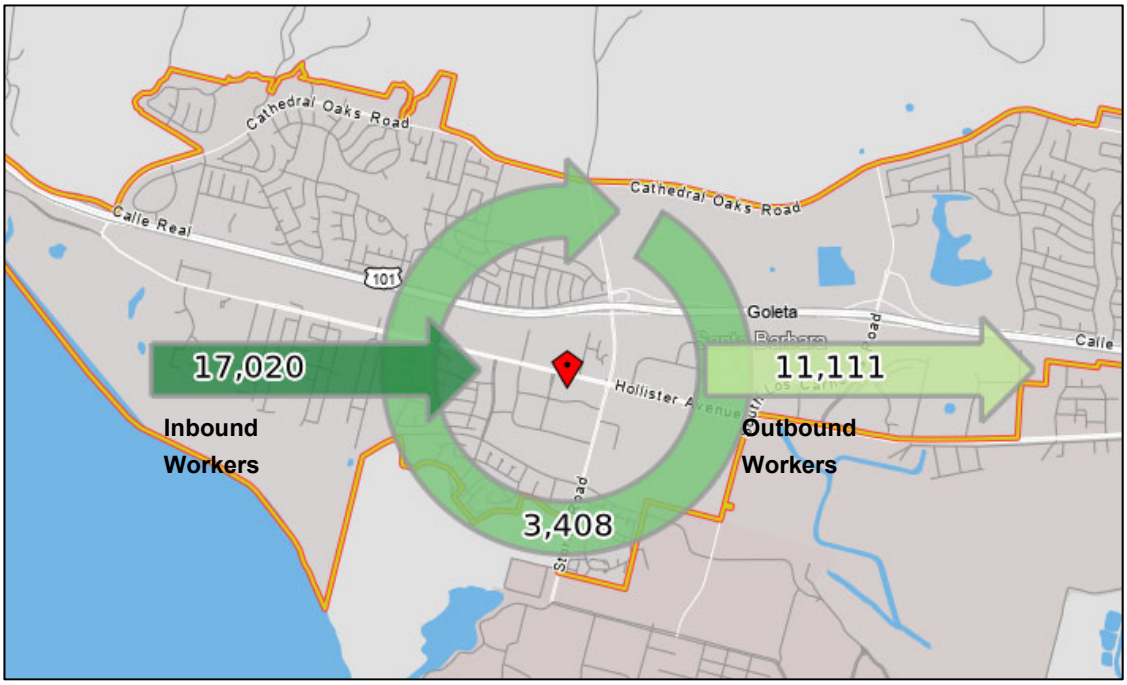


Figure 3.2 Screening Area for Residential-Based Projects



Increasing housing supply has the effect of reducing inbound commute traffic, as more employees that work in the City will also be able to live within the City. However, as shown in Figure 3.3, housing in Goleta also produces outbound commute traffic, which partially offsets the commute reduction of new housing. Overall, new housing within the City will reduce average VMT per capita. However, in most areas of the City, that reduction would not achieve 15% or more below the baseline and therefore cannot be presumed as less than significant.

Figure 3.3 Inflow & Outflow of Jobs - LEHD



GHD recommends that the City establish the following policy for map based screening.

"Typical Residential or Work type projects which are within defined low VMT boundaries are assumed to be less than significant per the California Office of Planning and Research and do not require further VMT analysis."

3.5 Transit Proximity Screening

Certain projects within ½ mile of an existing major transit stop or an existing stop along a high quality transit corridor will be considered less than significant impact on VMT. However, this will not apply if information indicates that the project will still generate high levels of VMT. For example, this might not be appropriate if they 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 Major transit stop is defined in Section 21064.3 of the California Public Resources code as the intersection of two or more major bus routes with a frequency of service interval of 15 minutes of less during the morning and afternoon peak commute periods. The City of Goleta proper is primarily served by multiple MTD routes; while there are intersecting transit routes they are not providing 15 minute service intervals. GHD recommends establishing this screening criteria although not current stops meet the definition. When service intervals are improved the screening criteria will already be established and can be mapped

GHD recommends that the City establish the following transit screening policy.

"Projects that are within ½ mile of a transit stop at the intersection of two transit routes or along a major route with service frequencies of 15 minutes or less are presumed to have a less than significant impact and do not require VMT analysis, Unless the project:

a) Has a floor to area ratio (FAR) of less than 0.75, or

b) Includes more parking than required under the City's zoning code, or

c) Is inconsistent with the region's Sustainable Communities Strategy, City Zoning Code, or City Land use Policies (i.e. General Plan or Specific Plan), or

d) Replaces affordable housing with a smaller number of moderate or high income residential units.

Localized shuttle routes that predominantly serve UCSB without connecting routes that have 15min or less headways are excluded from this screening criteria.

3.6 Affordable Housing Development

Affordable housing in infill locations generally improves jobs-housing balance, shortening commutes and reducing VMT. Therefore, a project consisting of a high percentage of affordable housing may

be considered a less than significant impact on VMT. OPR guidance allows for Lead agencies to 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.

Research by the California Housing Partnership[7] assessed California Household Travel Survey, LEHD, and LODES data provided by the US Census Bureau concluded that affordability is a factor that effects VMT, primarily due to affordable housing having a higher composition of non-workforce demographics, which generate less trips. However these findings are based on an aggregation of statewide data that may not be representative of local demographics occupying affordable housing projects.

In consultation with the City, GHD recommends the following affordable housing screening criteria:

"Housing projects with a minimum of 20% low and/or very low affordable deed-restricted housing units are presumed to be less than significant."

3.7 Redevelopment Projects Local-serving Retail (< 10,000 SF)

OPR's Technical Advisory states that lead agencies generally may presume that locally-serving retail developments have a less than significant impact on VMT. Locally-serving retail is defined as a retail project in an urban environment which improves retail destination proximity, shortens trips and reduced VMT. Regional-serving retail development, on the other hand, can lead to substitution of longer trips for shorter ones, and may tend to have a significant impact. The City should still consider project-specific information, such as market studies or economic impact analyses that might bear on travel behavior. 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.

Although OPR's recommendation is a threshold of 50,000 square feet, this is not proportional to the typical scale of retail within the City of Goleta and has the potential to draw regional trips, therefore it is recommended that Goleta establish a more conservative threshold for screening retail development at 10,000 square feet.

GHD recommends that the City establish the following retail screening policy.

"Individual retail units of less than 10,000 square feet may be presumed to have less than significant VMT effects if they are deemed to be locally serving. The City reserves to determine if a retail project less than 10,000 square feet is locally serving."

[7] "Income, Location, Efficiency, & VMT: Affordable Housing as Climate Strategy" (California Housing Partnership, 2015)

3.8 Transportation Projects

Transportation projects are required to examine induced travel impacts under CEQA. If a project would likely lead to a measurable and substantial increase in vehicle travel, the City should conduct an analysis assessing the amount of vehicle travel the project will either increase or decrease. 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. 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.

GHD recommends that the City use the net change in VMT to assess the transportation impacts of a transportation project, and establish the following criteria for when a transportation project should conduct an induced travel analysis, per OPR guidance.

Project types that would likely lead to a measurable or 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 (capacity increases)

In summary, Projects types that would not likely lead to a measurable or substantial increase in vehicle travel, and therefore are presumed to cause a less-than significant impact generally include:

- Transit and Active Transportation Projects
- Roadway Projects which reduce capacity and/or increase priority of non-automobile modes (transit, pedestrian, bicycle)

Attached at the end of this document as Appendix B is a list of transportation projects that would not likely lead to a VMT impact, and therefore would be screened out of an induced travel analysis.

4. VMT Mitigations

The mitigation strategies provided below are for reference only. It's recommended that the City retain discretion to determine appropriate mitigation on a project by project basis. The information provided below provides guidance and the technical basis for various mitigation strategies the City may choose to accept.

There are generally two categories of VMT mitigation currently available: 1) Non-programmatic mitigation, which inherently reduces trip generation without the need for ongoing monitoring and regulation; these include physical changes to the project description such as introducing mixed uses that increase internal capture, incorporating multimodal facilities such as bike parking & showers, incorporating multimodal infrastructure accessing the project. And 2) Programmatic mitigation, which is dependent on on-going actions taken by the occupant of the project and requires ongoing monitoring and regulation by the City such as transit subsidies, carpooling incentives, etc…. It's recommended that the City determine mitigation on a project by project basis, prioritizing non-programmatic mitigation to minimize demand on city staff resources.

Another type of mitigation outside of the City's control and not yet available is mitigation banking or exchanges. These types of programs work similarly to air quality Cap & Trade programs. These programs involve a regional agency that manages/governs an exchange where low VMT producing developments can sell VMT credits to high VMT producing development. Effectively, both projects are considered together and the overall resulting VMT is within adopted thresholds. This type of program would need a regional governing body and is not currently available. It's recommended that the City support such a regional program initiative if one is proposed.

4.1 VMT Reduction Strategies

The California Air Pollution Control Officers Association (CAPCOA) report *Quantifying Greenhouse Gas Mitigation Measures* (August 2010) provides a categorized list of quantifiable VMT mitigation measures, each with accompanying literature validating the VMT reduction rates. Additionally, there are Best Management Practices (BMP's) which may be quantifiable provided substantial evidence, or non-quantifiable measures which have preliminary evidence suggesting a reduction in VMT. Local agencies should provide incentives to encourage implementation of BMP's. Lastly, General Plan strategies are also an option, which may not be quantifiable on the project-level, but may be quantified under the assumption that the mitigation strategy will be implemented systemically or on a widespread basis. Figure 4.1 on the following page is from the CAPCOA report, and identifies the quantifiable transportation mitigation measures by group. Several of these mitigation strategies will be feasible within the City of Goleta. Following is discussion on the following items from the Figure, in further detail on how VMT reduction strategies could be implemented on a project level or a systemic level:

- Land use / Location
- Neighborhood / Site Design
- Commute Trip Reduction

- Transit System Improvements
- Direct Pricing

The reduction percentages shown are the maximum possible reductions. The CAPCOA report notes that these reduction rates are for reference only, and should not replace the quantification methods provided in further detail in a later section of the CAPCOA report. As new information and studies arise, the reduction percentages may change given substantial evidence supports the reduction in VMT. Projects may differ from the described measures, or may involve the application of more than one measure. Combining mitigation measures and VMT reductions are also addressed within the CAPCOA report. VMT reductions may be multiplied across the categories with the cross-category maximum(s) presented at the top for the first four and first five categories. Additionally, ensuring that the mitigation measures will be effective will require mitigation monitoring programs. In the sections covering the categories of VMT mitigation strategies below, unless otherwise noted, values for the reduction VMT variables come from the CAPCOA Report.

CAPCOA Chart 6-2: Transportation Strategies Organization

Transportation Measures (Five Subcategories) Global Maximum Reduction (all VMT):
urban = 75%; compact infill = 40%; suburban center or suburban with NEV = 20%; suburban = 15%

Global Cap for Road Pricing needs further study

Transportation Measures (Four Categories) Cross-Category Max Reduction (all VMT):
urban = 70%; compact infill = 35%; suburban center or suburban with NEV = 15%; suburban = 10%

Max Reduction = 15% overall; work VMT = 25%; school VMT = 65%;

Max Reduction = 25% (all VMT)

Land Use / Location	Neighborhood / Site Enhancement	Parking Policy / Pricing	Transit System Improvements	Commute Trip Reduction (assumes mixed use)	Road Pricing Management	Vehicles
Max Reduction: urban = 65%; compact infill = 30%; suburban center = 10%; suburban = 5%	Max Reduction: without NEV = 5%; with NEV = 15%	Max Reduction = 20%	Max Reduction = 10%	Max Reduction = 25% (work VMT)	Max Reduction = 25%	
Density (30%)	Pedestrian Network (2%)	Parking Supply Limits (12.5%)	Network Expansion (8.2%)	CTR Program Required = 21% work VMT Voluntary = 6.2% work VMT	Cordon Pricing (22%)	Electrify Loading Docks
Design (21.3%)	Traffic Calming (1%)	Unbundled Parking Costs (13%)	Service Frequency / Speed (2.5%)	Transit Fare Subsidy (20% work VMT)	Traffic Flow Improvements (45% CO_2)	Utilize Alternative Fueled Vehicles
Location Efficiency (65%)	NEV Network (14.4) <NEV Parking>	On-Street Market Pricing (5.5%)	Bus Rapid Transit (3.2%)	Employee Parking Cash-out (7.7% work VMT)	Required Contributions by Project	Utilize Electric or Hybrid Vehicles
Diversity (30%)	Car Share Program (0.7%)	Residential Area Parking Permits	Access Improvements	Workplace Parking Pricing (19.7% work VMT)		
Destination Accessibility (20%)	Bicycle Network <Lanes> <Parking> <Land Dedication for Trails>		Station Bike Parking	Alternative Work Schedules & Telecommute (5.5% work VMT)		
Transit Accessibility (25%)	Urban Non-Motorized Zones		Local Shuttles	CTR Marketing (5.5% work VMT)		
BMR Housing (1.2%)			Park & Ride Lots*	Employer-Sponsored Vanpool/Shuttle (13.4% work VMT)		
Orientation Toward Non-Auto Corridor				Ride Share Program (15% work VMT)		
Proximity to Bike Path				Bike Share Program		
				End of Trip Facilities		
				Preferential Parking Permit		
				School Pool (15.8% school VMT)		
				School Bus (6.3% school VMT)		

Note: Strategies in bold text are primary strategies with reported VMT reductions; non-bolded strategies are support or grouped strategies.

4.1.1 Non-Programmatic Mitigation Strategies

Non-Programmatic Mitigation Strategies will have the largest effect on reductions in VMT. By nature these types of mitigations would inherently reduce VMT without the need for on-going active implementation or City monitoring and management. Although ranges of VMT production for each of these measures are provided, the model and sketch planning tool is sensitive to these measures and should be used for evaluating mitigation effectiveness.

1. **Increase Density (Change housing types to higher density residential)** – Urban/Suburban Areas; based on percentage increase in density × elasticity of -0.07, maximum of 30% VMT reduction. Newer research from CARB presents that the elasticity ranges from -0.05 to -0.12 for residential uses and -0.03 to -0.74 for employment. This mitigation is primarily represented in the lower trip generation characteristics of higher density developments. The following sources form the basis of the quantification for this VMT reduction method:

    i) Source: Boarnet, M. and Handy, S. (2014). Impacts of Residential Density on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

    ii) Source: Circella, G. and Handy, S. (2014). Impacts of Employment Density on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

2. **Increase Location Efficiency (Change the Location of the Project)** – Urban/Suburban areas; VMT percent reduction for this measure is based on the location of the project: urban (65%), infill (30%), suburban center (10%), which tend to have higher VMT compared to the statewide average. This could be model-sensitive. This mitigation can primarily be achieved by locating the project within the map based screening areas shown in Figures 3.1 and 3.2

3. **Increase Diversity of Urban or Suburban Developments (Change the project to include more variety in landuse types)** – Mixed use developments; based on percentage increase in land use index versus single use development × elasticity (0.09). Newer research from CARB makes a distinction between having a mix of land used in a single development (0% to 12% VMT reduction) and having a mix of land uses within a neighborhood (0.3% to 4% VMT reduction. This mitigation is primarily represented in terms of internal capture rates. The following sources form the basis of the quantification for this VMT reduction method:

    i) Source: Spears, S.et al. (2014). Impacts of Land-Use Mix on Passenger Vehicle Use and Greenhouse Gas Emissions- Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

    ii) Source: Zhang, Wengia et al. "Short- and Long-Term Effects of Land Use on Reducing Personal Vehicle Miles of Travel."

4. **Increase Destination Accessibility (Rezone other areas of the City to reduce distance to primary destination landuse types)** - Percentage decrease in distance to downtown or

major job center versus typical ITE suburban development × elasticity (0.20). Maximum of 20% VMT reduction. Newer research from CARB presents a VMT reduction range of 0.5% to 12%, measuring destination accessibility based on the number of attractions within a given travel time. The following source forms the basis of the quantification for this VMT reduction method:

i) Source: Handy, S. et al. (2014). Impacts of Network Connectivity on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

5. **Integrate Affordable Housing (Include deed restricted affordable housing)** – Urban/Suburban areas. Based on the percentage of units in project that is low-income housing x 4%. Maximum of 1.20% VMT reduction. Affordable housing trip characteristics should be quantified locally before application of affordable housing mitigation strategies.

6. **Provide Pedestrian Network Improvements & Connections** – Range of <1.0% VMT reduction (rural areas) to 2.0% VMT reduction (urban/suburban areas; pedestrian network extends both within project site and connects to destinations off-site). One or several of the other mitigation strategies in this category may be implemented to achieve this additional VMT reduction strategy. Newer research from CARB suggests a VMT reduction range of 0.5% to 5.7%. The following source forms the basis of the quantification for this VMT reduction method:

i) Source: Handy, S. et al. (2014). Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

7. **Provide Bicycle Network Improvements & Connections** – Bicycle network extends both within project site and connects to destinations off-site. VMT reduction calculation on a project by project basis.

8. **Improve Transit Accessibility** – Improving access to existing transit facilities through sidewalk, crosswalk, and bus shelter improvements. (VMT reduction calculation on a project by project basis)

i) Source: Tal, G. et al. (2013). Policy Brief on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/transitaccess/transit_access_brief120313.pdf

ii) Source: Zamir, K. R. et al. (2014). Effects of Transit-Oriented Development on Trip Generation, Distribution, and Mode Share in Washington, D.C., and Baltimore, Maryland. Transportation Research Record: Journal of the Transportation Research Board. 2413, 45–53. DOI: 10.3141/2413-05

9. **Traffic Calming Measures** – VMT Reduction based on the table below, found in the CAPCOA Report. The CAPCOA Report has a table that presents VMT reduction based on percent of intersections and percent of streets with traffic calming measures.

4.1.2 Programmatic Mitigation

Programmatic Mitigation can be an effective means to reduce VMT however, programmatic mitigation typically requires on-going active implementation by current and future project occupants for the life of the project along with City monitoring and management. Programmatic mitigation can also be outside the control of the City and later discontinued or reduced, such as Transit service. Therefore programmatic mitigation should only be considered after consideration of non-programmatic mitigation options are exhausted. It's recommended that programmatic mitigation only be adopted if there is a degree of certainty that the mitigation can be maintain for the life of the project.

4.1.2.1 Transit Operations

The strategies in this category focus on introducing new transit services or expanding existing transit services. These strategies may be implemented either through on-site transit features, or through subsidizing transit programs that serve the area of the project site.

10. **Expand Transit Network** – Based on percent increase in transit network coverage × elasticity (suburban 1.01, urban 0.72, urban center 0.65) × existing transit mode share × adjustment from transit ridership to VMT (0.67). Maximum of 8.2% VMT reduction. Newer research from CARB suggests a VMT reduction range of 0.1% to 10.5%. The following source forms the basis of the quantification for this VMT reduction method:

    i) Source: Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

11. **Increase Transit Service Frequency/Speed** – Based on percent reduction in headway × elasticity (urban 0.32, suburban 0.36) × adjustment for level of implementation (50% for fewer than half of all lines improved, 85% for more than half of all lines improved) × existing transit mode share × adjustment from transit ridership to VMT (0.67). Maximum of 2.5% VMT reduction. Newer research from CARB suggests a VMT reduction range of 0.3% to 6.3%. Also, achieving transit screening threshold. The following source forms the basis of the quantification for this VMT reduction method:

    i) Source: Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

12. Provide Bike Parking Near Transit - (VMT reduction benefit for this strategy is incorporated into 'Expand Transit Network' strategy.)

13. Provide Local Shuttles – Local shuttles provide service to transit hubs, and address the “first mile/last mile” problem. (VMT reduction benefit for this strategy is incorporated into ‘Expand Transit Network’ strategy.)

4.1.2.2 Commute Trip Reduction

The strategies in this category focus on promoting or incentivizing the use of non-auto modes for commute-to-work trips, in order to reduce the number or length of vehicle trips. Several of the mitigation strategies in this category are more applicable to non-residential developments, such as employee-sponsored van-pool program, pricing workplace parking, and employee parking “cash-out”.

14. Commute Trip Reduction Program (Voluntary) – Based on reduction in commute VMT (5.4% for suburban center, 6.2% urban) × percent of employees eligible. Maximum of 6.2% VMT reduction. Newer research from CARB suggests a VMT reduction range of 1.0% to 6.0%, and specifies a list of program features that must all be incorporated to apply this range. The following source forms the basis of the quantification for this VMT reduction method:

    i) Source: Boarnet, M. et al. (2014). Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

15. Commute Trip Reduction Program (Required Implementation/Monitoring) – Based in shift in mode share of commute trips (21% reduction in vehicle trips) × percent of employees eligible.

16. Provide Ride-Sharing Programs – Based on percent reduction in commute VMT (low density suburb 5%, suburban center 10%, urban 15%) × percent of employees eligible.

17. Implement Subsidized or Discounted Transit Program – Based on percent reduction in vehicle trips (ranging from 1.5% to 20.0% dependent on the dollar amount subsidized per person, and urban/rural classification) × percent of eligible employees. Newer research from CARB and other studies provides more specific VMT reduction ranges based on the type of program. The following sources form the basis of the quantification for this VMT reduction method:

    i) Provide employee benefits that include subsidized or discounted transit: Range of 0% to 16% VMT reduction. Source: Carolina, P. et al. (2016). Do Employee Commuter Benefits Increase Transit Ridership? Evidence from the NY-NJ Region. Washington, DC: Transportation Research Board, 96th Annual Meeting.

    ii) System-wide reduction in transit fares: Range of 0.1% to 6.9% VMT reduction. Source: Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm

18. Provide End Of Trip Facilities – End of trip facilities, such as showers, secure bicycle lockers, and changing spaces, encourage choosing bicycling as a viable form of commute travel.

(VMT reduction benefit for this strategy is incorporated into either of the 'Commute Trip Reduction Program' strategies.)

19. Encourage Telecommuting and Alternative Work Schedules – Based on percent reduction in commute VMT (ranges from 0.07% to 5.5% based on percent of employee participation up to 25%, and type of alternative work schedule program). Program types include 9-day/80-hour work week, 4-day/40-hour work week, and telecommuting 1.5 days. Newer research from CARB suggests a VMT reduction range of 0.2% to 4.5%, and also includes staggering work start times as an option for this strategy. The following source forms the basis of the quantification for this VMT reduction method:

    i) Source: Handy, S. et al. (2013). Policy Brief on the Impacts of Telecommuting Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/telecommuting/telecommuting_brief120313.pdf

20. Implement Commute Trip Reduction Marketing – Based on percent reduction in commute vehicle trips (4%) × percent of employees eligible. Maximum of 4.0% VMT reduction.

21. Implement Employer-Sponsored Van Pool Program – Based on percent shift in vanpool mode share of commute trips (range of 2% to 20% dependent on degree of implementation and employer size) × percent of employees eligible × adjustment of vanpool mode share to commute VMT (0.67). Newer research from the ICF presents a VMT reduction range of 1.4% to 6.8%. The following source forms the basis of the quantification for this VMT reduction method:

    i) Source: ICF. (2014). GHG Impacts for Commuter Shuttles Pilot Program.

22. Implement Bike-Sharing Program – (VMT reduction benefit for this strategy is incorporated into 'Improve Design of Development' strategy.)

23. Implement School Bus Program – Based on percent of families expected to use school bus program (ranges from 50% to 84% × adjustment to convert school day VMT to annual VMT (0.75). Maximum of 63% VMT reduction.

24. Price Workplace Parking – Based on percentage reduction in commute VMT (ranges from 0.5% to 19.7% dependent on daily parking charge and urban/rural classification) × percent of employees subject to priced parking. Newer research compiled from multiple studies suggests a VMT reduction range of 0.5% to 14%, and specifies that the degree of mode shift in response to a priced parking program depends on the availability of other modes. The following sources form the basis of the quantification for this VMT reduction method:

    i) Source: Concas, S. and Nayak, N. (2012), A Meta-Analysis of Parking Price Elasticity. Washington, DC: Transportation Research Board, 2012 Annual Meeting.

    ii) Source: Dale, S. et al. (2016). Evaluating the Impact of a Workplace Parking Levy on Local Traffic Congestion: The Case of Nottingham UK. Washington, DC: Transportation Research Board, 96th Annual Meeting.

25. Implement Employee Parking "Cash-Out" – Based on percentage reduction in commute VMT (ranges from 3.0% to 7.7% dependent on urban/rural classification) × percent of employees eligible.

4.2 Mitigation Toolbox

Table 4.1 presents a toolbox of mitigation measures specifically curated for the City of Goleta. This toolbox incorporates the quantification methods and maximum reductions conveyed in the CAPCOA report, as well as more recent studies.

Table 4.1 – VMT Mitigation Measures

CAPCOA Designation	Mitigation Type	Mitigation Strategy Description	Maximum Reduction	Calculation	Variables	Source(s)
Land Use / Location			Urban: 65% Compact infill: 30% Suburban center: 10% Suburban: 5%			
LUT-1	Physical/Design	Increase Density	10.75%	% VMT Reduction = A * B	**A** = Percentage increase in housing units per acre or jobs per job acre (≤ 500%) **B** = Elasticity of VMT with respect to density (range of -0.04 to -0.22, based on cited study)	CARB Boarnet, M. and Handy, S. (2014). Impacts of Residential Density on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board.Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
LUT-2	Physical/Design	Increase Location Efficiency	65.00%	% VMT reduction = A	**A** = 65% (urban) 30% (compact infill) 10% (suburban center)	CAPCOA Holtzclaw, et al. 2002. “Location Efficiency: Neighborhood and Socioeconomic Characteristics Determine Auto Ownership and Use – Studies in Chicago, Los Angeles, and Chicago.” Transportation Planning and Technology, Vol. 25, pp. 1–27.
LUT-3	Physical/Design	Increase Diversity of Urban and Suburban Developments (Mixed Use)	12% (multiple land uses in single development) 4% (multiple land uses in same neighborhood)	% VMT Reduction = Land Use * B	**Land Use** = Percentage increase in land use index versus single use development **B** = elasticity of VMT with respect to land use index (0.09)	CAPCOA Ewing, R. and Cervero, R. (2010). Travel and the Built Environment - A Meta-Analysis. Journal of the American Planning Association,76(3),265-294. Cited in California Air Pollution Control Officers Association. (2010).Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf CARB Zhang, Wengia et al. "Short- and Long-Term Effects of Land Use on Reducing Personal Vehicle Miles of Travel."
LUT-4	Physical/Design	Incr. Destination Accessibility	12.00%	% VMT Reduction = Center Distance * B	**Center Distance** = Percentage decrease in distance to downtown or major job center versus typical ITE suburban development **B** = Elasticity of VMT with respect to distance to downtown or major job center (0.20)	CARB Handy, S. et al. (2014). Impacts of Network Connectivity on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Handy, S. et al. (2013). Impacts of Regional Accessibility on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
LUT-5	Physical/Design	Increase Transit Accessibility	5.8% (within half-mile of transit station) 7.3% (implementing a transit-oriented development)	% VMT Reduction = Transit * B	**Transit** = Increase in transit mode share **B** = adjustments from transit ridership increase to VMT (0.67)	CAPCOA Lund, H. et al. (2004). Travel Characteristics of Transit-Oriented Development in California. Oakland, CA: Bay Area Rapid Transit District, Metropolitan Transportation Commission, and Caltrans. CARB Tal, G. et al. (2013). Policy Brief on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/transitaccess/transit_access_brief120313.pdf Zamir, K. R. et al. (2014). Effects of Transit-Oriented Development on Trip Generation, Distribution, and Mode Share in Washington, D.C., and Baltimore, Maryland. Transportation Research Record: Journal of the Transportation Research Board. 2413, 45–53. DOI: 10.3141/2413-05
LUT-6	Physical/Design	Integrate Affordable and Below Market Rate Housing	1.20%	% VMT Reduction = 4% * A	**A** = Percentage of units in project that are deed-restricted BMR housing	CARB “Draft Memorandum: Infill and Complete Streets Study, Task 2.1: Local Trip Generation Study.”Measuring the Miles: Developing new metrics for vehicle travel in LA. City of Los Angeles, April 19, 2017.
LUT-7	Physical/Design	Orient Project Toward Non-Auto Corridor	0.50%	no sufficiently proven quantification method available	n/a	CAPCOA
LUT-8	Physical/Design	Locate Project near Bike Path/Bike Lane	0.63%	no sufficiently proven quantification method available	n/a	CAPCOA
LUT-9	Physical/Design	Improve Design of Development	21.30%	% VMT Reduction = Intersections * B	**Intersections** = Percentage increase in intersections versus a typical ITE suburban development (≤ 500%) **B** = Elasticity of VMT with respect to percentage of intersections (0.12)	CAPCOA Ewing, R., and Cervero, R., "Travel and the Built Environment - A Meta-Analysis." Journal of the American Planning Association, (2010).

Table 4.1 – VMT Mitigation Measures

CAPCOA Designation	Mitigation Type	Mitigation Strategy Description	Maximum Reduction	Calculation	Variables	Source(s)
Neighborhood / Site Design			Without NEV: 5% With NEV: 15%			
SDT-1	Physical/Design	Provide Pedestrian Network Improvements	2.00%	% VMT Reduction = A	**A** = 2% (urban/suburban, within project site and connecting off-site), 1% (urban/suburban, within project site only), <1% (rural, within project site and connecting off-site)	CAPCOA Center for Clean Air Policy (CCAP) Transportation Emission Guidebook. http://www.ccap.org/safe/guidebook/guide_complete.html (accessed March 2010) 1000 Friends of Oregon (1997) "Making the Connections: A Summary of the LUTRAQ Project" (p. 16): http://www.onethousandfriendsoforegon.org/resources/lut_vol7.html
SDT-2	Physical/Design	Provide Traffic Calming Measures	1.70%	% VMT Reduction = A	**A** = % reduction in VMT (value from table in CAPCOA report)	CARB California Air Resources Board. (2016). Greenhouse Gas Quantification Methodology for the California Transportation Commission Active Transportation Program Greenhouse Gas Reduction Fund Fiscal Year 2016-17. Retrieved from: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ctc_atp_finalqm_16-17.pdf.
SDT-4	Physical/Design	Create Urban Non-Motorized Zones	0.20%	Grouped strategy. VMT reduction for this strategy is incorporated into SDT-1.	n/a	CAPCOA Cambridge Systematics. Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions. Technical Appendices. Prepared for the Urban Land Institute. http://www.movingcooler.info/Library/Documents/Moving%20Cooler_Appendix%20B_Effectiveness_102209.pdf
SDT-5	Physical/Design	Incorporate Bike Lane Street Design (on-site)	1.00%	Grouped strategy. VMT reduction for this strategy is incorporated into LUT-9.	n/a	CAPCOA Dill, Jennifer and Theresa Carr (2003). "Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Tem, Commuters Will Use Them – Another Look." TRB 2003 Annual Meeting CD-ROM.
SDT-6	Physical/Design	Provide Bike Parking in Non-Residential Projects	0.63%	Grouped strategy. VMT reduction for this strategy is incorporated into LUT-9.	n/a	CAPCOA Center For Clean Air Policy (CCAP) Transportation Emission Guidebook. http://www.ccap.org/safe/guidebook/guide_complete.html; Based on results of 2005 literature search conducted by TIAX on behalf of SMAQMD.
SDT-7	Physical/Design	Provide Bike Parking in Multi-Unit Residential Projects	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into LUT-9.	n/a	n/a
SDT-8	Physical/Design	Provide EV Parking	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into SDT-3.	n/a	n/a
SDT-9	Physical/Design	Dedicate Land for Bike Trails	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into LUT-9.	n/a	n/a
SDT-3	Program	Implement a Neighborhood Electric Vehicle (NEV) Network	12.70%	% VMT reduction = HH * Penetration * NEV	**HH** = Number of households **Penetration** = number of NEVs per household (0.04 to 1.0) **NEV** = VMT reduction rate per household (12.7%)	CAPCOA City of Lincoln, MHM Engineers & Surveyors, Neighborhood Electric Vehicle Transportation Program Final Report, Issued 04/05/05 City of Lincoln, A Report to the California Legislature as required by Assembly Bill 2353, Neighborhood Electric Vehicle Transportation Plan Evaluation, January 1, 2008.

Table 4.1 – VMT Mitigation Measures

CAPCOA Designation	Mitigation Type	Mitigation Strategy Description	Maximum Reduction	Calculation	Variables	Source(s)
Commute Trip Reduction			25% of Work VMT			
TRT-5	Physical/Design	Provide End of Trip Facilities	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into TRT-1 or TRT-2.	n/a	n/a
TRT-1	Program	Implement Voluntary CTR Programs	6.00%	% VMT Reduction = A * B	**A** = % reduction in commute VMT (low density suburb: 5.2%, suburban center: 5.4%, urban: 6.0%) **B** = % employees eligible	CARB Boarnet, M. et al. (2014). Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
TRT-2	Program	Implement Mandatory CTR Programs – Required Implementation/Monitoring	21.00%	% VMT Reduction = A * B* C	**A** = % shift in vehicle mode share of commute trips (21%) **B** = % employees eligible **C** = Adjustment from vehicle mode share to commute VMT (1.0)	CAPCOA Nelson/Nygaard (2008). South San Francisco Mode Share and Parking Report for Genentech, Inc.(p. 8) Cited in: California Air Pollution Control Officers Association. (2010). Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOAQuantification- Report-9-14-Final.pdf
TRT-3	Program	Provide Ride-Sharing Programs	8.30%	% VMT Reduction = Commute * Employee	**Commute** = % reduction in commute VMT (low density suburb: 5%, suburban center: 10%, urban: 15%) **Employee** = % employees eligible	Victoria Transport Policy Institute. (2015). Ridesharing: Carpooling and Vanpooling. Online TDM Encyclopedia. Retrieved from: http://vtpi.org/tdm/tdm34.htm
TRT-4	Program	Implement Subsidized or Discounted Transit Program	14.00%	% VMT Reduction = A * B * C	**A** = % reduction in commute vehicle trips (value from table in CAPCOA report) **B** = % employees eligible **C** = Adjustment from commute VT to commute VMT (1.0)	Victoria Transport Policy Institute. (2017). Understanding Transport Demands and Elasticities. Online TDM Encyclopedia. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm
TRT-6	Program	Telecommuting and Alternative Work Schedules	4.50%	% Commute VMT Reduction = Commute	**Commute** = % reduction in commute VMT (value from table in CAPCOA report)	CARB Handy, S. et al. (2013). Policy Brief on the Impacts of Telecommuting Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/telecommuting/telecommuting_brief120313.pdf
TRT-7	Program	Implement Commute Trip Reduction Marketing	4.00%	% Commute VMT Reduction = A * B * C	**A** = % reduction in commute vehicle trips (4%) **B** = % employees eligible **C** = Adjustment from commute VT to commute VMT (1.0)	CAPCOA Pratt, Dick. Personal communication regarding the Draft of TCRP 95 Traveler Response to Transportation System Changes – Chapter 19 Employer and Institutional TDM Strategies. Transit Cooperative Research Program. Cited in California Air Pollution Control Officers Association. (2010).Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wpcontent/ uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf
TRT-8	Program	Implement Preferential Parking Permit Program	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into TRT-1 or TRT-2.	n/a	n/a
TRT-9	Program	Implement Car-Sharing Program	1.60%	% VMT Reduction = A * Penetration	**A** = % reduction in annual VMT of a car-share member **Penetration** = 1% to 5% based on the deployment level (number of vehicles, number of people sharing one vehicle)	CARB Lovejoy, K. et al. (2013). Impacts of Carsharing on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
TRT-10	Program	Implement School Pool Program	15.80%	% VMT Reduction = Families * B	**Families** = % families that participate (moderate implementation: 16%, aggressive implementation: 35%) **B** = adjustments to convert from participation to daily VMT to annual school VMT (0.45)	CAPCOA Transportation Demand Management Institute of the Association for Commuter Transportation. TDM Case Studies and Commuter Testimonials. Prepared for the US EPA. 1997. (p. 10, 36-38) http://www.epa.gov/OMS/stateresources/rellinks/docs/tdmcases.pdf
TRT-11	Program	Provide Employer-Sponsored Vanpool/Shuttle	13.40%	% VMT Reduction = A * B * C	**A** = % shift in vanpool mode share of commute trips (2% to 20%, based on degree of implementation and employer size) **B** = % employees eligible **C** = adjustments from vanpool mode share to commute VMT (0.67)	CAPCOA TCRP Report 95. Chapter 5: Vanpools and Buspools - Traveler Response to Transportation System Changes. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c5.pdf. (p.5-8)
TRT-12	Program	Implement Bike-Sharing Program	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into SDT-5 or LUT-9.	n/a	CAPCOA Pucher J., Dill, J., and Handy, S. Infrastructure, Programs and Policies to Increase Bicycling: An International Review. February 2010.
TRT-13	Program	Implement School Bus Program	30.00%	% VMT Reduction = A * B	**A** = % families expected to use/using school bus program (typical range of 50% to 84%) **B** = adjustments to convert from participation to school day VMT to annual school VMT (0.75)	CAPCOA JD Franz Research, Inc.; Lamorinda School Bus Program, 2003 Parent Survey, Final Report; January 2004; obtained from Juliet Hansen, Program Manager. (p. 5)
TRT-14	Program	Price Workplace Parking	14.00%	% VMT Reduction = A * B	**A** = % reduction in commute VMT (value from table in CAPCOA report) **B** = Percent of employees subject to priced parking	Concas, S. and Nayak, N. (2012), A Meta-Analysis of Parking Price Elasticity. Washington, DC: Transportation Research Board, 2012 Annual Meeting. Dale, S. et al. (2016). Evaluating the Impact of a Workplace Parking Levy on Local Traffic Congestion: The Case of Nottingham UK. Washington, DC: Transportation Research Board, 96th Annual Meeting.
TRT-15	Program	Implement Employee Parking "Cash-Out"	7.70%	% VMT Reduction = A * B	**A** = Change in Commute VMT (low density suburb: 3.0%, suburban center: 4.5%, urban: 7.7%) **B** = % of employees eligible	CARB Shoup, D. (1997). Evaluating the Effects of Cashing Out Employer-Paid Parking: Eight Case Studies. Transport Policy. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/research/apr/past/93-308a.pdf.

Table 4.1 – VMT Mitigation Measures

CAPCOA Designation	Mitigation Type	Mitigation Strategy Description	Maximum Reduction	Calculation	Variables	Source(s)
Transit System Improvements			10%			
TST-1	Physical/Design	Provide a Bus Rapid Transit System	3.20%	% VMT Reduction = Riders * Mode * Lines * D	**Riders** = % increase in transit ridership on BRT line (default value 28%) **Mode** = Existing transit mode share **Lines** = Percentage of lines serving project converting to BRT **D** = Adjustments from transit ridership increase to VMT (0.67)	CAPCOA FTA, August 2005. "Las Vegas Metropolitan Area Express BRT Demonstration Project", NTD, http://www.ntdprogram.gov/ntdprogram/cs?action=showRegion Agencies&region=9
TST-2	Physical/Design	Implement Transit Access Improvements	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into TST-3 or TST-4.	n/a	n/a
TST-5	Physical/Design	Provide Bike Parking Near Transit	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into TST-3 or TST-4.	n/a	n/a
TST-3	Program	Expand Transit Network	10.50%	% VMT Reduction = Coverage * B * Mode * D	**Coverage** = % increase in transit network coverage (area) **B** = elasticity of transit ridership with respect to service coverage (urban center: 0.65, urban: 0.72, suburban: 1.01) **Mode** = existing transit mode share **D** = adjustments from transit ridership increase to VMT (0.67)	CARB Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
TST-4	Program	Increase Transit Service Frequency/Speed	6.30%	% VMT Reduction = Headway * B * C * Mode * E	**Headway** = % reduction in headways (15% to 80%) **B** = elasticity of transit ridership with respect to increased frequency of service (urban: 0.32, suburban: 0.36) **C** = adjustment for level of implementation (if over half of lines improved serve the new development: 85%, else: 50%) **Mode** = existing transit mode share **E** = adjustments from transit ridership increase to VMT	CARB Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
TST-6	Program	Provide Local Shuttles	n/a	Grouped strategy. VMT reduction for this strategy is incorporated into TST-3 or TST-4.	n/a	n/a

5. Traffic Safety

The sketch-planning tool will be a quick-response tool representative of the SBCAG model for VMT output. Users will select a parcel (or other area) where development is being anticipated and the parcel location will aid in determining the corresponding SBCAG model traffic analysis zone to determine travel behavior and VMT.

(This section to be completed.)

APPENDIX C FOR SKETCH PLANNING TOOL

APPENDIX D FOR SAFETY IMPACT ANALYSIS GUIDANCE

Appendices

Appendix A
Screening Criteria Memorandum

Memorandum

May 27, 2020

To:	City of Goleta	Project:	City of Goleta VMT
From:	Jake Hudson, Rosanna Southern,	Ref/Job No.:	11209041
CC:		File No.:	11209041-MEM002.DOCX

Subject: Project Screening Criteria (VMT)

1. Introduction

The City of Goleta is developing procedures to assess transportation impacts under CEQA, per SB 743. The first component of this work effort, establishing the baseline VMT, is underway. A draft memorandum has been submitted comparing the various VMT baselines available to the City and is pending selection. The second component of this work effort, which will also inform the first, is establishing the screening criteria whereby certain projects under this criteria would be presumed to have a less than significant impacts on VMT and would not require VMT analysis.

The purpose of this memorandum is to review guidance, resources and methods for evaluating screening criteria that can be used for determining whether development projects within the City are assumed to have less than significant impact on VMT and do not require a VMT analysis. The screening process will identify project types and locations that would not require VMT analysis because under this criteria the outcome is known to be less than significant. The literature review includes the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018), and the Caltrans *Draft VMT-Focused Transportation Impact Study Guide* (February 2020). The data sources and technical review includes the SBCAG Regional Travel Demand Model (RTDM), US Census's Longitudinal Employer-Housing Dynamics (LEHD) data, and published data for the region.

2. Screening Criteria

2.1 OPR Recommended Screening Thresholds

OPR's Technical Advisory lists the following screening criteria for land use projects. These types of development projects are presumed to have a less than significant impact on vehicle miles traveled and therefore. OPR's Technical Advisory suggests that lead agencies consider screening out VMT impacts using project size, maps, transit availability, and provision of affordable housing. This memorandum assesses the criteria and provides recommendations on how they may be applied for the City of Goleta.

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A. **Small projects** that are consistent with the Sustainable Communities Strategy (SCS) or General Plan and generate or attract fewer than 110 daily trips (per CEQA). **GHD Recommends the City adopt this screening criteria.**

B. **Map-based screening** for residential and office projects located in low VMT areas, and incorporate similar features (density, mix of uses, transit accessibility). **GHD Recommends the City adopt this screening criteria, however the baseline & thresholds as yet to be selected.**

C. **Transit Proximity**, certain projects within ½ mile of an existing major transit stop[1] or an existing stop along a high quality transit corridor[2]. However, this will not apply if information indicates that the project will still generate high levels of VMT. **GHD recommends the City adopt this threshold, however no transit stops in Goleta currently meet this criteria.**

D. **Affordable Housing** Development in infill locations. **GHD recommends deferring adoption of this screening threshold until localized analysis can verify that low income housing projects generate 15% less trips than market rate residential projects in the City of Goleta.**

E. **Locally-serving retail projects**, typically less than 50,000 square feet. **GHD Recommends the City adopt this screening criteria. However, acknowledging that smaller retail projects maybe regionally serving, GHD also recommends that the City retain discretion to determine if this screening criteria is appropriate on a case by case basis.**

2.2 Screening for Small Projects

OPR's Technical Advisory states that a screening threshold of 110 trips per day generally may be assumed to cause a less than significant impact, given that the project is consistent with the Sustainable Communities Strategy (SCS) or General Plan, and there is not substantial evidence that the project would generate a potentially significant level of VMT.

GHD recommends that the City establish the following policy for screening small projects.

"Projects that generate less than 110 automobile trips per day are presumed to have a less than significant VMT impact. Example single use Projects that generate less than 110 daily trips based on the most current ITE Trip generation Manual include but are not limited to the following:

a) 9 Single Family Units.

b) 20 Multifamily Units.

c) 1,000 SQFT Retail

[1] "major transit stop" - A major transit stop is a "site containing an existing rail, a ferry terminal served by bus or rail transit service, or intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during morning and evening peak hour commute". (OPR 2018)

[2] 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.").

d) 10,000 SQFT Office

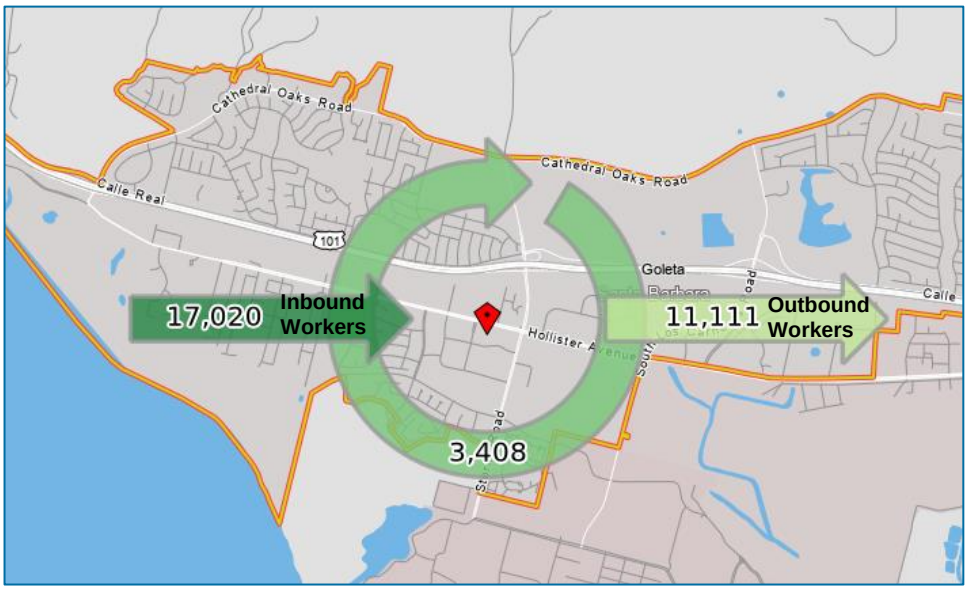
e) 22,000 SQFT Industrial

2.3 Map-Based Screening

Residential and work based projects that locate in areas with existing low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Therefore these projects can be presumed to have a less than significant VMT impact without the need to conduct a VMT analysis. The following Figures (pages 5 through 9 of this memorandum) present the Residential VMT per capita and Work VMT per employee, aggregated by different areas of the City, compared to different geographic baseline VMT rate averages currently under consideration: Citywide average (City Only), Greater Goleta average, South Coast average, and Countywide average. Areas within Goleta are colored based on how they relate to the regional average being considered, utilizing a 15% below average as the threshold for impact significance. These areas where projects would be presumed to have a less than significant impact are depicted in green in these Figures. These indicate where residential and work based projects would generate an average VMT of 15% or less below the VMT baselines currently under consideration and would not require a VMT analysis. Areas with insufficient data to presume less than significant impacts are grouped together with areas more than 15% higher than the regional average. GHD recommends utilizing the citywide average to establish baseline VMT rates.

The limited areas for screening housing projects as shown in these figures for each of the different geography baselines may not be intuitive. Increasing housing supply does have the effect of reducing inbound commute traffic. However, as shown in the figure below, housing in Goleta also produces outbound commute traffic which as the effect of partially offsetting the commute reduction of new housing. Overall new housing within the City will reduce average VMT, however in most areas of the City that reduction would not achieve 15% or more below the baseline and therefore cannot be presumed as less than significant.

LEHD: Inflow & Outflow of Jobs



Areas which are not presumed to have a VMT impact and should have VMT analysis conducted are shown in Yellow, Orange, and Red. These areas and gradations are only shown as reference for the purposes of this work effort. The final screening maps would only need to indicate areas in green where projects would be presumed to have less than significant impacts and not require a VMT analysis.

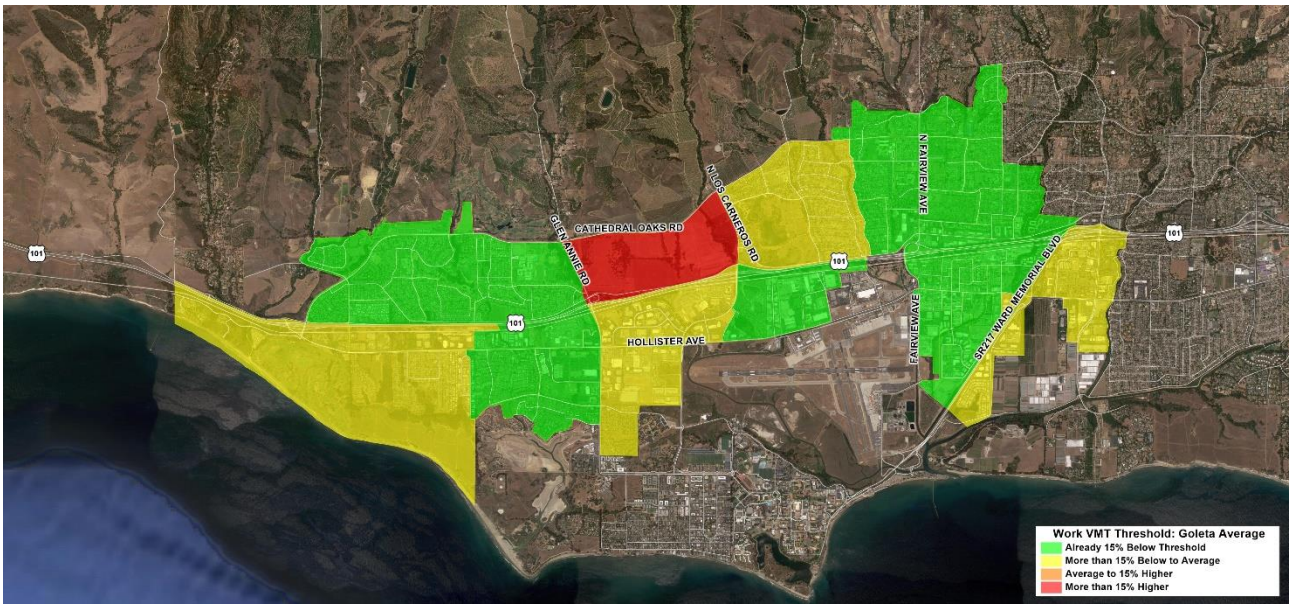
It's important to emphasize that if a project is not presumed to be less than significant based on the following screening maps that does not necessarily mean that the project will have a VMT impact, only that a less than significant impact cannot be assumed and that a VMT analysis would be necessary to make that determination.

GHD recommends that the City establish the following policy for map based screening.

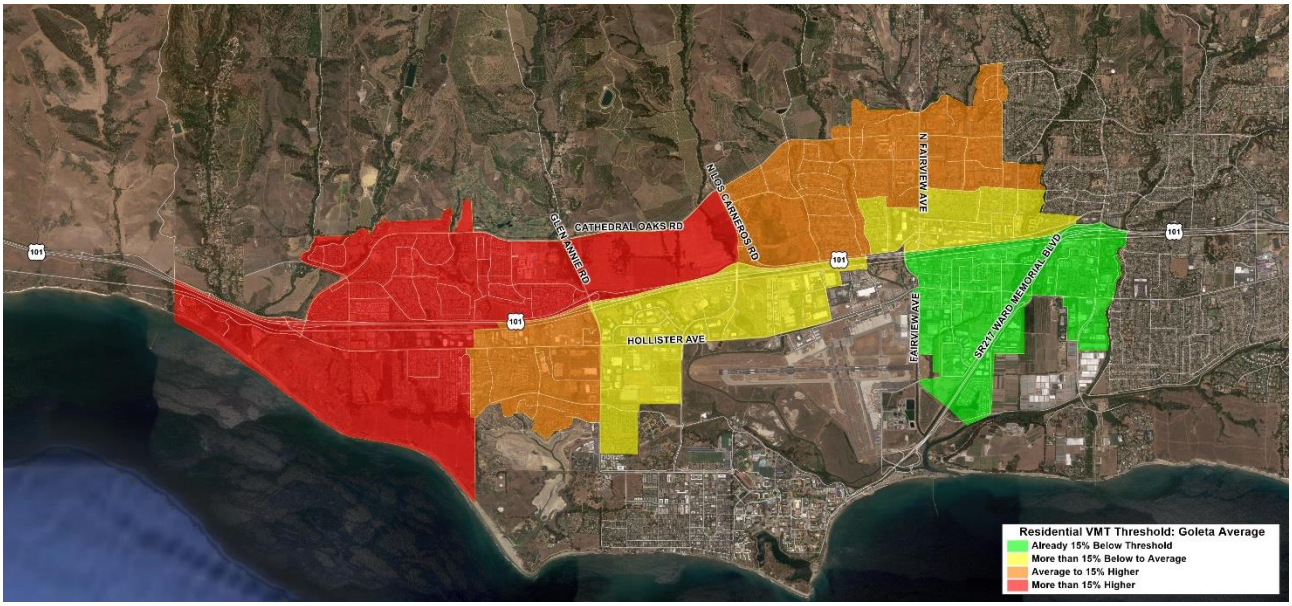
"Typical Residential or Work type projects which are within defined low VMT boundaries are assumed to be less than significant per the California Office of Planning and Research and do not require further VMT analysis."

CITY ONLY BASELINE VMT

Work Based Projects

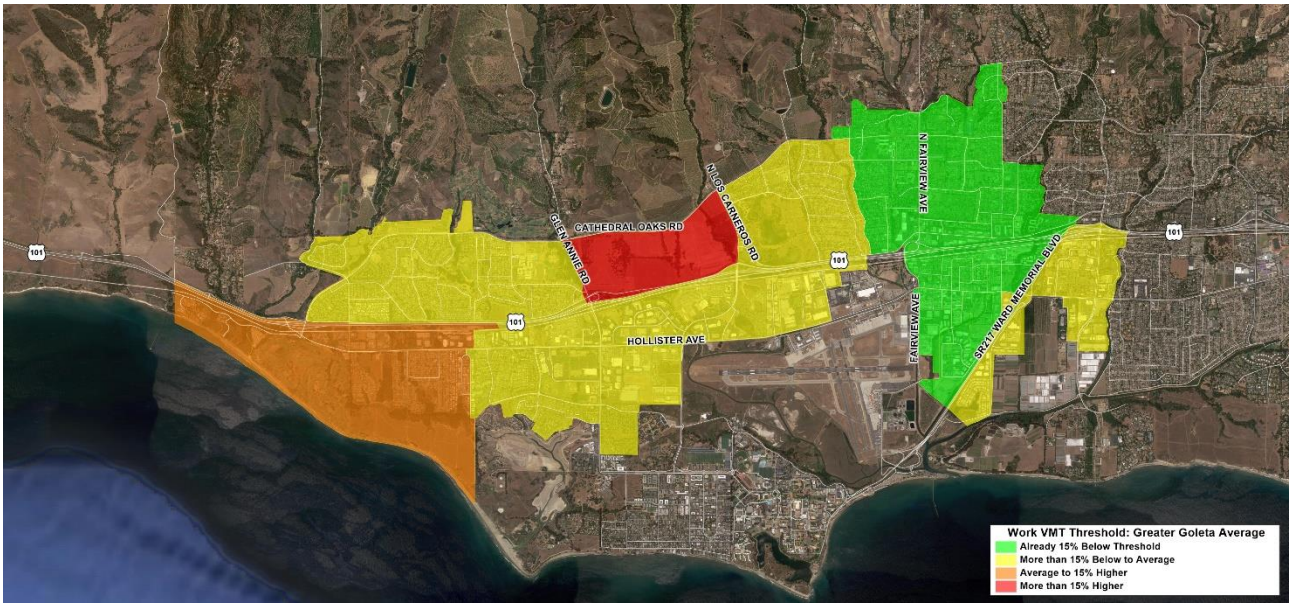


Residential Based Projects

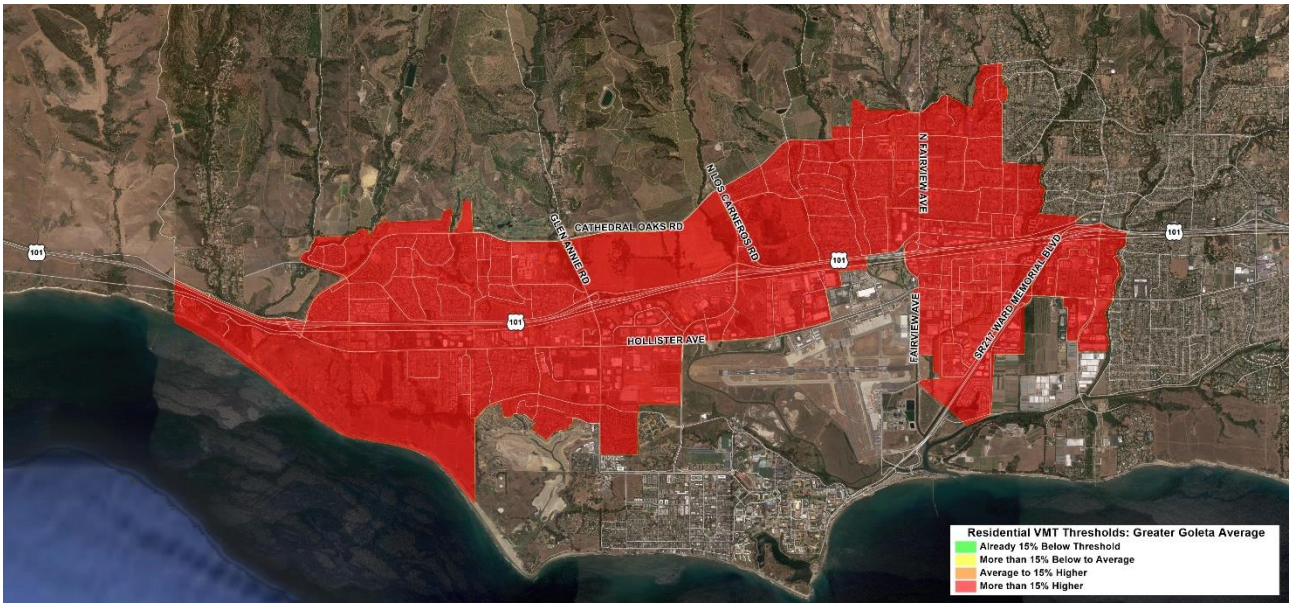


GREATER GOLETA BASELINE VMT

Work Based Projects

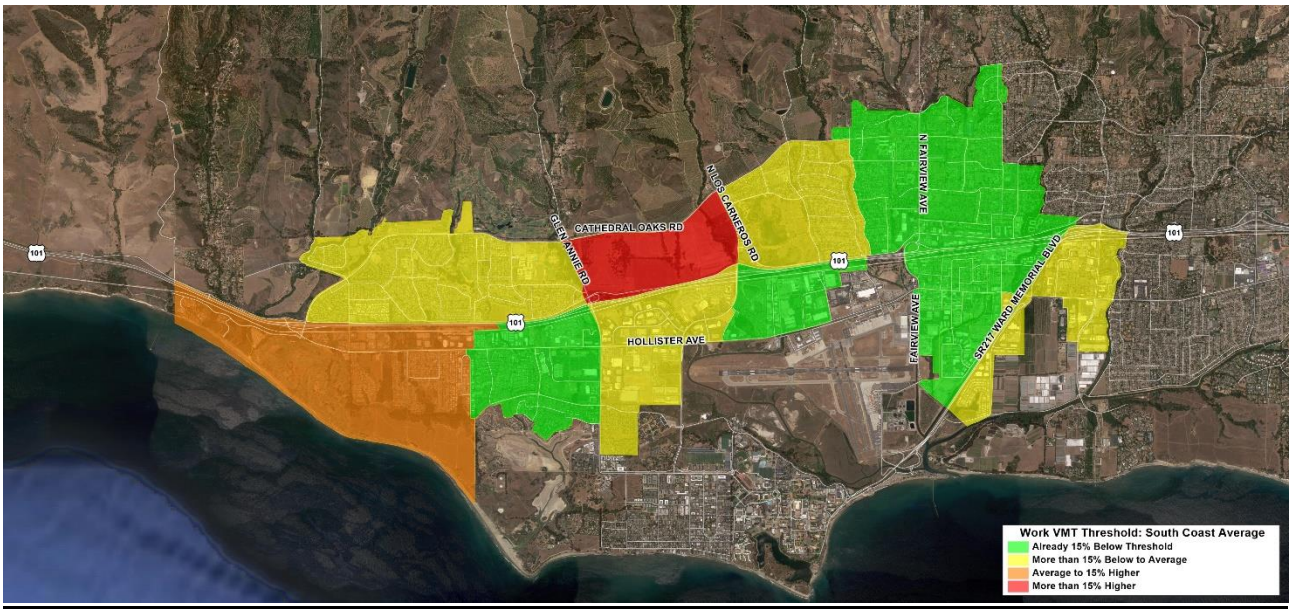


Residential Based Projects

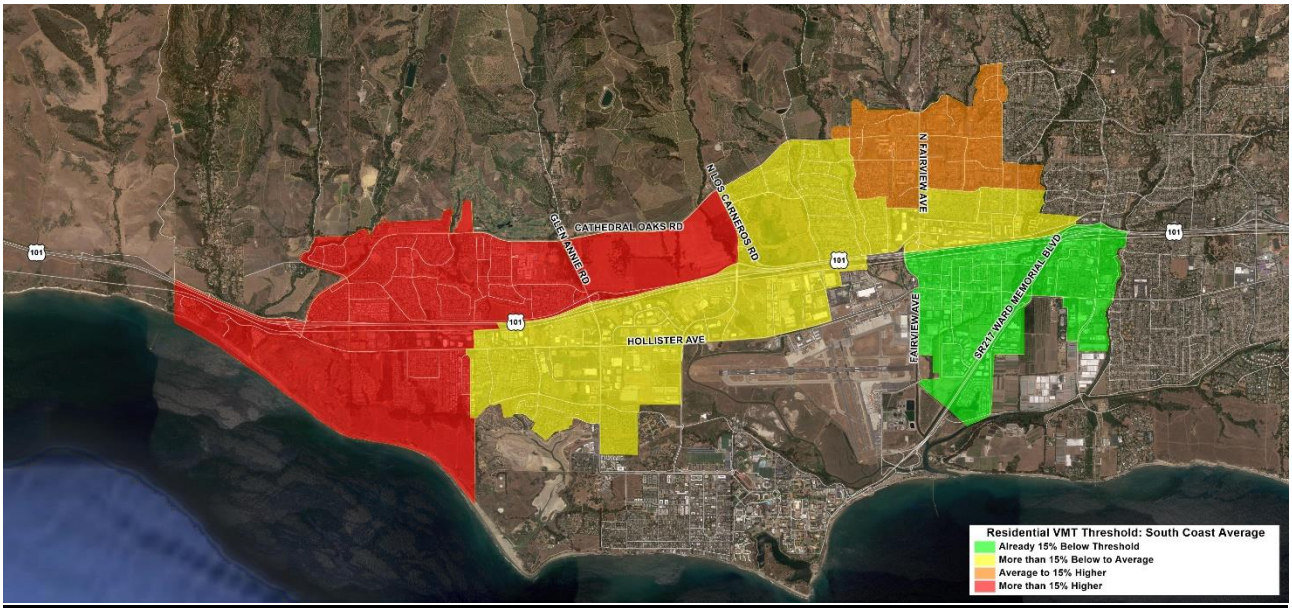


SOUTH COAST BASELINE VMT

Work Based Projects

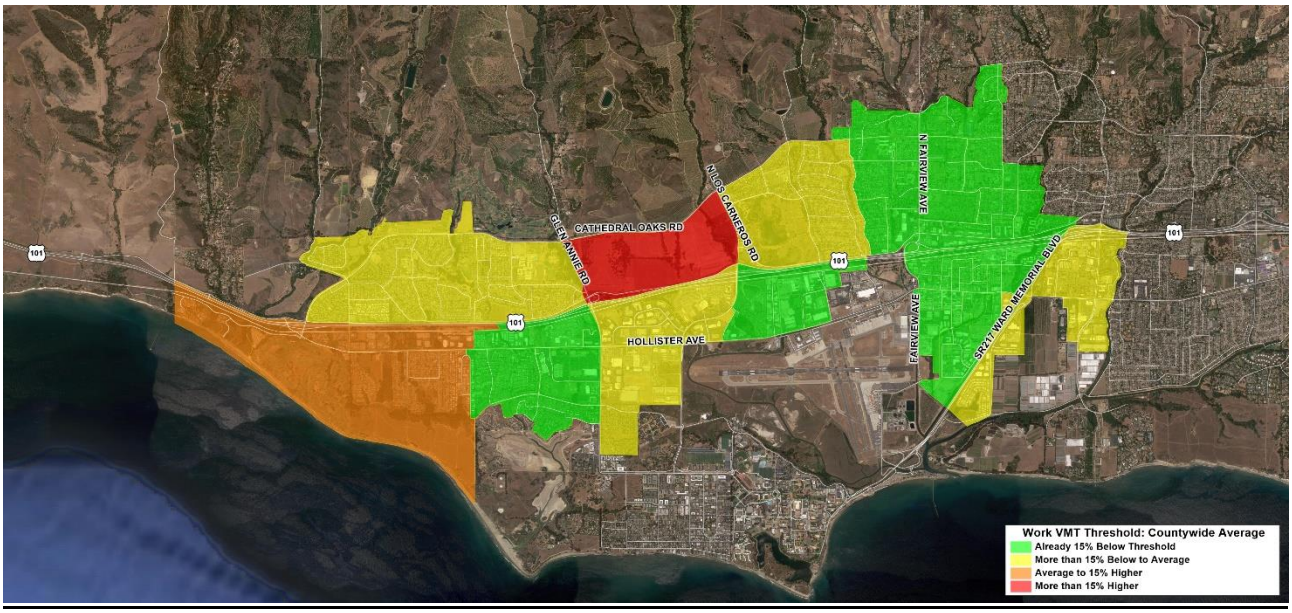


Residential Based Projects

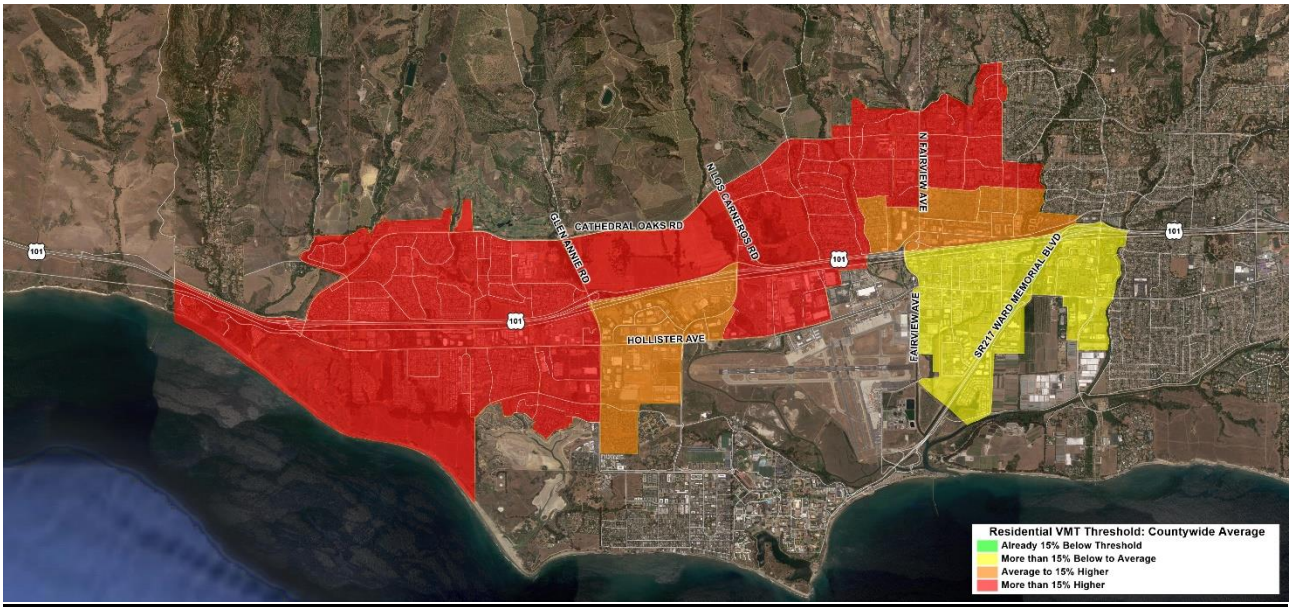


COUNTYWIDE BASELINE VMT

Work Based Projects



Residential Based Projects



2.4 Near Transit Stations

Certain projects within ½ mile of an existing major transit stop or an existing stop along a high quality transit corridor will be considered less than significant impact on VMT. However, this will not apply if information indicates that the project will still generate high levels of VMT. For example, this might not be appropriate if they 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 Major transit stop is defined in Section 21064.3 of the California Public Resources code as the intersection of two or more major bus routes with a frequency of service interval of 15 minutes of less during the morning and afternoon peak commute periods. The City of Goleta proper is primarily served by multiple MTD routes, while there are intersecting transit routes they are not providing 15 minute service intervals. GHD recommends establishing this screening criteria although not current stops meet the definition. When service intervals are improved the screening criteria will already be established and can be mapped

GHD recommends that the City establish the following transit screening policy.

"Projects that are within ½ mile of a transit stop at the intersection of two transit routes with 15 minute or less headways are presumed to have a less than significant impact and do not require VMT analysis, Unless the project:

a) Has a floor to area ratio (FAR) of less than 0.75, or

b) Includes more parking than required under the City's zoning code, or

c) Is inconsistent with the region's Sustainable Communities Strategy, City Zoning Code, or City Land use Policies (i.e. General Plan or Specific Plan), or

d) Replaces affordable housing with a smaller number of moderate or high income residential units."

2.5 Affordable Housing Development

Affordable housing in infill locations generally improves jobs-housing balance, shortening commutes and reducing VMT. Therefore, a project consisting of a high percentage of affordable housing may be considered a less than significant impact on VMT. OPR guidance allows for Lead agencies to 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.

Research by the California Housing Partnership[3] assessed California Household Travel Survey, LEHD, and LODES data provided by the US Census Bureau. This analysis concluded that affordability is independently associated with VMT, primarily due to low income housing having a higher composition of non-workforce demographics, which generate less trips. However these findings are based on an aggregation of statewide data that may not be representative of local demographics occupying affordable housing projects.

Therefore GHD recommends differing adoption of a affordable housing screening threshold until a study can verify that affordable housing within the City of Goleta does generate at least 15% less trips than other housing types.

2.6 Redevelopment Projects Local-serving Retail (< 50,000 SF)

OPR's Technical Advisory states that lead agencies generally may presume that locally-serving retail developments have a less than significant impact on VMT. Locally-serving retail in an urban environment may improve retail destination proximity, shortening trips and reducing VMT. Regional-serving retail development, on the other hand, can lead to substitution of longer trips for shorter ones, and may tend to have a significant impact. The City should still consider project-specific information, such as market studies or economic impact analyses that might bear on travel behavior. 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.

GHD recommends that the City establish the following transit screening policy.

"Retail projects less than 50,000 square feet may be presumed to have less than significant VMT effects if they are deemed to be locally serving. The City reserves discretion in making a determination of if a retail project less than 50,000 square feet is locally serving."

[3] "Income, Location, Efficiency, & VMT: Affordable Housing as Climate Strategy" (California Housing Partnership, 2015)

Appendix B
Transportation Projects Screening

APPENDIX B

Transportation Projects Screening

Per OPR Guidance, the following projects 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 C
Safety Guidance

Draft Traffic Safety Analysis Guidance

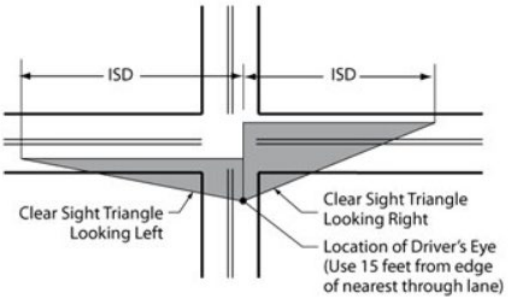
1. Project Frontage

Insufficient sight distance and spacing at driveways can be a contributing factor in automobile, bicycle, and pedestrian collisions. If there is inadequate distance for a motorist to see approaching vehicles before their line of sight is blocked by an obstruction or horizontal/vertical alignment of the roadway there is a higher propensity for traffic collisions. Similarly closely spaced driveways create additional conflict points and a therefore a higher propensity for traffic collisions. Either of these conditions could be considered a potentially significant impact.

Projects which include construction of new roadway & sidewalk network serving the project maybe considered less than significant if the project is conditioned to design and construct those facilities to provide minimum sight distance and driveway spacing.

1.1 Driveway Sight Distance

I. Sight distance analysis should be performed for each proposed driveway to determine if adequate sight distance is provided. To perform this analysis a Sight triangle diagram shall be produced for each driveway depicting roadway curvature and obstructions (ie….on-street parking, buildings, sidewalk furniture).



Speed (mph) *	Stopping Sight Distance (ft.)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

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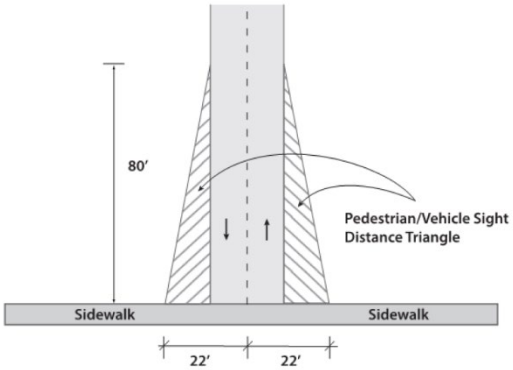
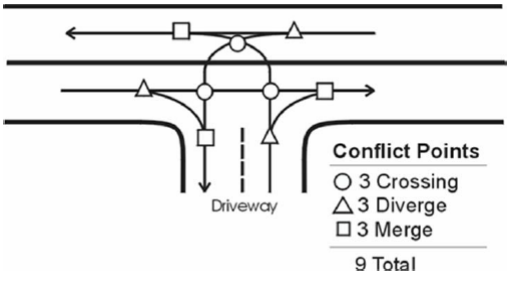
Sight distance should also be performed for pedestrians in areas that have zero setback requirements. To perform this analysis a Sight Triangle shall be produced for the driveway approach to the fronting sidewalk.

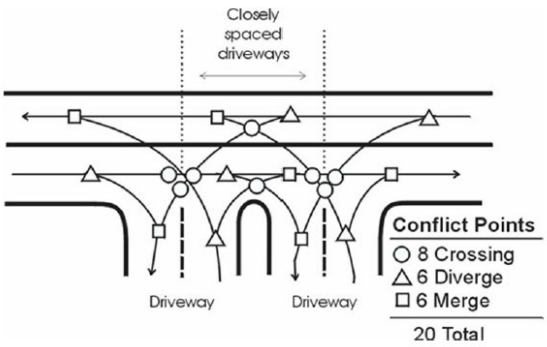


1.2 Driveway Spacing

Spacing between proposed driveways on collector or higher classified roadways should be calculated and reported. Proposed driveways which are in closer proximity to other proposed or existing driveways should be identified. A conflict diagram as shown below is an effective way to quantify the number of additional conflict points are created as a result of closely spaced driveways.

Downstream Functional Area & Min. Driveway Spacing	
Speed	Distance
25 MPH	150'
30 MPH	200'
35 MPH	250'
40 MPH	300'
45 MPH	360'
50 MPH	430'
55 MPH	500'





Due to the combination of low volume and speed, driveway spacing on local roadways can be presumed to be less than significant.

Conditions that maybe considered Potentially Significant Impacts:

- Project Access Point has Inadequate Sight Distance
- Project Driveway Spacing is below minimum distances thresholds and/or creates additional conflict points due to proximity to another intersection

Potential Mitigation Measures

The safety of an access connection is improved when the location and geometrics of the connection are modified, moved, or combined with other driveways to provide adequate visibility to its user. Also prohibition/restriction of movement requiring visibility may also mitigate the impact.

- Relocation of Driveways
- Access Restricted Driveways (No Thru and/or Left Turns)
- Combining Driveways
- Reciprocal Access Easements with Adjacent Properties.

2. Project Trips Generated at High Incident Collision Locations

Project traffic generated at high collision incident or rate locations maybe at risk of encountering the same collision pattern. Also added project traffic at these locations may exacerbate the collision pattern identified at that location. These high incident or rate locations and predominant patterns are typically identified as part of the City's Systemic Safety Analysis Report Program (SSARP) or Local Road Safety Plan (LRSP).

High Incident Collision Locations

Project trip distribution & assignment shall be performed and cross-referenced with high incident or rate locations identified from the City's SSARP or LRSP. If SSARP or LRSP data is not available or expired, high incident locations can be identified with data from the Statewide Integrated Traffic Records System. If it's found that a project generates traffic at a high collision incident or rate location the project generated movements should be cross referenced with the movements that are associated with the predominant collision.

Conditions that maybe considered Potentially Significant Impacts:

If the proposed project generates traffic an identified high collision incident or rate location and the project generated trip turning movements are consistent with the predominant collision pattern.

Potential Mitigation Measures:

- Implementation of the collision countermeasure(s) identified in the adopted SSARP and/or LRSP or in the absence a SSARP/LRSP or an alternate collision countermeasure(s) that provides a proportional offset.
- Modify the project such that trip generation and distribution are no longer projected at a high incident location or consistent with the predominant collision pattern..

3. Study Intersection Queueing

If project traffic causes or exacerbates turn pocket queues to extend beyond turn pocket capacity, this leads to stopped traffic in a thru lane which may not be readily apparent to vehicles proceeding straight on a green

indication at a traffic signal or at an uncontrolled intersection increasing the propensity for rear end and sideswipe collisions.

Queueing & Turn Pocket Capacity

Calculate the 95th percentile queuing lengths for right and left turn pockets at study intersections and determine whether the existing or proposed pockets have adequate storage length for the 95th percentile queues.

Conditions that maybe considered Potentially Significant Impacts:

When the 95th percentile right or left turn queues extend beyond the length of the respective turn pocket.

Potential Mitigation Measures

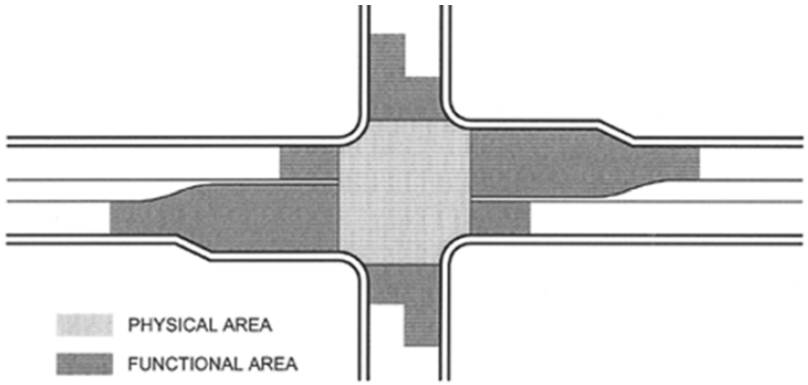
- Lengthen the turn pocket or add an additional turn pocket.
- Modify signal timing to reduce queues
- Modify the project to generate less trip or have a lower distribution thru the intersection.

4. Study Intersection Functional Area

The area around controlled intersections are complex and unique because it is effected by several conflicts that can occur within and near the intersection. The addition of driveways or roadways into an intersection's functional area creates additional conflict points and therefore increases the propensity for traffic collisions. Similarly if a project adds traffic to an intersection increasing the functional area to or beyond existing or planned driveways/roadways this also creates additional conflict points and therefore increases the propensity for traffic collisions.

Project Access & Functional Areas

The methodology for calculating the functional area of an intersection is as defined by the Transportation Research Board's (TRB) Access Management Manual and depicted below. The functional area of controlled intersections should be calculated for study area intersections to determine the project's driveways are within an intersection's functional area or project generated traffic extends an intersection's functional area beyond existing driveways.



Upstream Functional Area		
Speed	Distance	
30 MPH	225'	+ 95th Percentile Queue Length
35 MPH	320'	+ 95th Percentile Queue Length
40 MPH	420'	+ 95th Percentile Queue Length
45 MPH	515'	+ 95th Percentile Queue Length
50 MPH	610'	+ 95th Percentile Queue Length
55 MPH	710'	+ 95th Percentile Queue Length

Downstream Functional Area & Min. Driveway Spacing	
Speed	Distance
25 MPH	150'
30 MPH	200'
35 MPH	250'
40 MPH	300'
45 MPH	360'
50 MPH	430'
55 MPH	500'

Conditions that maybe considered Potentially Significant Impacts:

The project's proposed driveway is within the functional of an adjacent intersection or Project generated traffic extends the functional area of an intersection to or beyond existing or planned driveways/roadways adjacent to the intersection.

Potential Mitigation Measures

- Access Restricted Driveways
- Relocation of Driveways
- Limit movement to right in, right out only by provision of a non-traversable median or flexible pylons
- Offsetting connections
- Relocating of one leg of the minor roadway

5. Types of Vehicles Generated & Compatibility with Surrounding Infrastructure

If respective access routes are not designed to accommodate the types of vehicles a project is anticipated to generate or the project proposes substandard access design features the project would potentially increase the propensity for traffic collisions due to incompatibility with surrounding infrastructure and landuses.

Design Vehicle & Turning Radii

Design vehicles mostly likely generated by the project should be identified. Assessment of turning radii, clearances, and visibility for project design vehicles at project driveways and predominant routes based on the project trip distribution should be conducted.

Conditions that maybe considered Potentially Significant Impacts:

Primary access routes are not designed to accommodate vehicle types generated by the project

Potential Mitigation Measures

- Upgrades to surrounding infrastructure to support design vehicles.

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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