

# **VMT Thresholds Study**

County of San Joaquin

## **Draft for Review**

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## Executive Summary

**SR 743** fundamentally changes the way transportation analysis is conducted as part of the California Environmental Quality Act (CEQA) and Environmental Impact Reports. Automobile Level of Service, although permitted as a local policy threshold, is no longer considered an impact on the environment. Instead, vehicle miles traveled (VMT) is **not** the primary transportation metric for evaluating 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 procedures, tools, screening criteria, and impact criteria in accordance with SB 743 and OPR guidance.

Through this analysis, GHD has found that the regional travel demand model, maintained by the San Joaquin Council of Governments (SJCOC), in conjunction with US Census journey-to-work data from the Longitudinal-Employer Household Dynamics (LEHD) Program, is the most accurate tool for measuring full lengths for vehicle miles of travel, as prescribed by OPR. GHD, in collaboration with sub-consultants Elite Transportation Group (ETG) and Rincon, utilized the SJCOC travel demand model to evaluate VMT, establish baseline VMT, and develop a Sketch Planning Tool for screening and conducting VMT analysis. Through this analysis, GHD is recommending the County establish the **Unincorporated Countywide Average VMT with 15% below baseline as the impact criteria thresholds for Residential and Work VMT, and zero net increase in total VMT for retail and all other visitor-serving projects.** The baseline VMT and threshold values for the County, as outlined in this study, are as follows:

- Baseline Residential VMT: 26.6 per capita
  - Threshold of 15% below baseline of 22.6 per capita
- Baseline Work VMT: 19.1 per employee
  - Resulting threshold of 15% below baseline of 16.2 per employee
- Retail Threshold: No net increase in Total VMT

Consistent with OPR, screening criteria for presuming a project has a less than significant impact have also been established, including screening maps for residential and work projects. The screening maps indicate where residential and work based projects would generate an average VMT of 15% below the VMT baselines or less in areas that do not have low service population (VMT efficient areas), and thus would not require a VMT analysis. It is important to emphasize that if a project is not screened out 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. GHD has created a map-based "VMT Screening Tool" for County and project applicants to use that provides criteria-based and map-based screening evaluations for residential, work, retail, and other projects.



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# 1. Introduction

## 1.1 Purpose

In recognition of the requirements of Senate Bill (SB) 743, San Joaquin County has initiated this Vehicle Miles Traveled (VMT) Thresholds Study to identify appropriate County specific VMT thresholds for the determination of transportation impacts that are in compliance with the requirements of the California Environmental Quality Act (CEQA). To prepare this study, the County has contracted GHD Inc. (GHD), and sub-consultants, Elite Transportation Group, Inc. (ETG) and Rincon Consultants, Inc. (Rincon), to develop procedures and guidelines for assessing transportation impacts under CEQA, per SB 743. This study summarizes the analytical methodologies, assumptions and data used within San Joaquin County to establish recommended VMT analysis methodologies and thresholds that are consistent with the State's guidelines and regulatory framework, and that reflect the travel behavior of its residents and employees. As documented in this study, GHD has developed baseline VMT estimates, project screening criteria, thresholds of significance, and methodologies for evaluating land development and transportation infrastructure using VMT as the primary impact criterion. GHD will also develop a map-based VMT Screening Tool for County and project applicant use.

## 1.2 Background

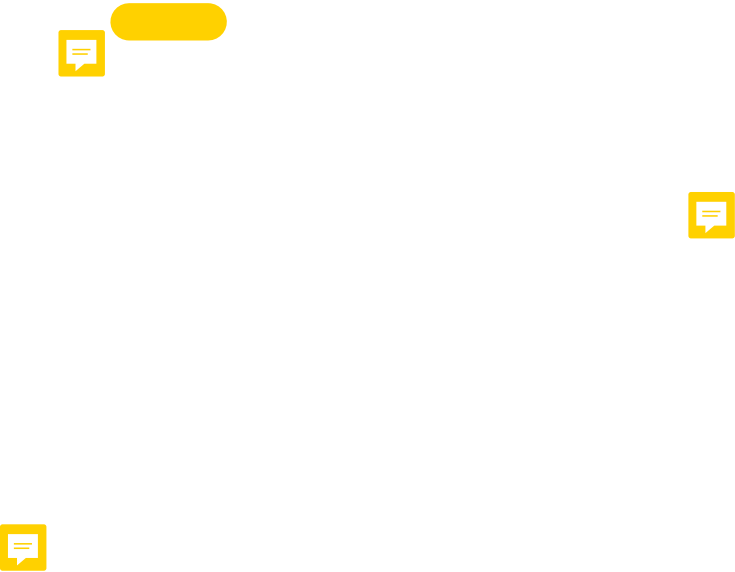
Senate Bill (SB) 743 was signed into law in 2013, with the intent to better align CEQA practices with statewide sustainability goals related to efficient land use, greater multimodal choices, and greenhouse gas reductions. The provisions of SB 743 became effective Statewide on July 1, 2020. Under SB 743, automobile delay, traditionally measured as level of service (LOS), are no longer considered an environmental impact under CEQA. Instead, impacts are determined by changes to 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 transit. In recognition that the character of communities, availability of travel modes options and geographic areas all differ throughout the State, each jurisdiction, from regional agency, to County, to City, have been given the opportunity to establish their own VMT thresholds consistent with the State's guidelines and regulatory framework. Still, LOS will be utilized as a metric outside of CEQA, within agency policies for development approval.

## 1.3 Transportation Analysis Procedures

As part of the process for incorporating VMT into the transportation analysis requirements pursuant to SB 743, Rincon has prepared the *CEQA Transportation Analysis Guidelines*, which are available separately. These Guidelines establish protocol for transportation analysis based on the current state-of-practice in transportation planning and engineering, and includes guidance for CEQA analysis (based on VMT), and consistency with the General Plan (intersection and/or roadway performance).

The flowchart below presents the procedure for both CEQA analysis and General Plan consistency. This document and the *CEQA Transportation Analysis Guidelines* are focused on the “CEQA VMT Analysis” side of the flowchart, and the “Local Policy Consistency Analysis” is provided for a general reference.

**Figure 1.1 Transportation Assessment Procedures Flowchart**







## 2. Baseline VMT Estimation, Methodology, & VMT Thresholds

This section reviews guidance, options, resources, and analytical methodologies for evaluating VMT in San Joaquin County that can be used to establish baseline VMT. The literature review includes the Governor’s Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018), the Caltrans *Draft VMT-Focused Transportation Impact Study Guide* (February 2020).

The data sources and technical review includes the San Joaquin Council of Governments (SJCOG) Regional Travel Demand Model (RTDM), US Census’s Longitudinal Employer-Household Dynamics (LEHD) Program data, and published data for the region.

### 2.1 Regulatory and Planning Framework

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 became effective Statewide on July 1, 2020. Under SB 743, automobile delay, traditionally measured as level of service (LOS), are no longer considered an environmental impact under CEQA. Instead, impacts are determined by changes to 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 transit.

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 OPR’s 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.

### ***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. The screening thresholds are as follows:

- 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<sup>1</sup> 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 VMT-Focused Transportation Impact Study Guide**

Caltrans recently published an update of their *Transportation Impact Study Guide* (TISG, May 20, 2020), which replaces the prior 2002 guidelines. The Caltrans' 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.

<sup>1</sup> "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)



The *TISG* heavily references OPR's *Technical Advisory* as the basis for its guidance. The *TISG* suggests use of OPR's recommended thresholds of significance 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 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. 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;
- VMT mitigation bank programs; and,
- VMT mitigation exchange programs.

Caltrans also indicates that additional future guidance will include the basis for requesting transportation impact analysis that is not based on VMT, but rather a simplified safety analysis approach that reduces risk to all road users and focuses on multimodal analysis as well as access management issues. GHD will continue to monitor future updates for consideration as part of this effort for the County.

### **2.1.3 Caltrans Draft Transportation Analysis Framework (TAF) and Draft 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 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."*

## 2.2 Recommended VMT Evaluation Criteria

GHD has recommended a similar approach from the OPR *Technical Advisory* land use type criteria to account for uses commonly found in the County. GHD proposes that San Joaquin County assess land development projects according to the primary proposed land use type, as follows:

**Residential Projects (Residential VMT)**– Establish baseline VMT and threshold on a per capita basis. When assessing a residential project, the project’s VMT is divided by the number of residents expected to occupy the project to determine the VMT per capita of the project. “Residential” uses include, but are not limited to, single-family, multi-family, and mobile homes.

**Employment Projects (Work-based VMT)** – Establish baseline VMT and threshold on a per employee basis. When assessing an office or manufacturing project, the project’s VMT is divided by the number of employees expected to occupy the project to determine the VMT per employee of the project. “Work” uses include, but are not limited to, offices, office parks, business parks, industrial, warehousing, processing, and manufacturing where the predominant VMT is employee-based<sup>2</sup>.

**Retail Projects (Net VMT)** – Measure total change in VMT within the region’s boundary (the difference in total VMT in the area affected with and without the project), and determine the threshold based on net change in total VMT. “Retail” uses or projects appropriate for Net VMT analysis include, but are not limited to, supermarkets, restaurants, gas stations, wineries, agriculture tourism, hotels, and religious facilities. Public and recreational uses such as parks, private schools, hospitals, libraries, and public services may also be assessed in this way, if needed. The predominant VMT for these use types is generated by visitors or patrons, rather than employment.

**Mixed-Use Projects** – Evaluate each component independently using the above thresholds, considering credit for internal capture, OR evaluate the dominant use. In the analysis of each use, a project should take credit for internal capture.

**Other Project Types** – **Other project types** should consider the predominant VMT being generated by the Project. Use the project’s primary trip generation to determine, Applicants should consult County Public Works staff to determine the appropriate methodology.

**Redevelopment Projects** - Measured based on net change in total VMT for the total region.

**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

<sup>2</sup> **Consideration of Truck VMT:** Although heavy-duty truck VMT is generally excluded from OPR’s Technical Advisory, a **project applicant may elect to include** an assessment of truck VMT if it is reasonable to assume that the project would result in a significant change in the pattern, frequency, or length of truck trips. Truck VMT would be assessed in terms of net change in total truck VMT. This does not preclude the need to assess VMT per employee. This would mainly apply to projects such as industrial, warehousing, processing, and manufacturing uses.

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.

**Transportation Projects** – Transportation impacts of a transportation project should be calculated based on the net change in total VMT. If a project would likely lead to a substantial or measurable increase in vehicle travel, the County 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.

## **2.3 Baseline VMT Data Sources**

Project-level VMT is assessed against statewide, regional, or local averages, per capita or per employee depending on the Project type. It is critical, therefore, that the County carefully considers and establishes 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 every 5 years, concurrent with an update to the SJCOG RTP/SCS and RTDM.

### **2.3.1 SJCOG RTDM**

The regional SJCOG model was utilized to estimate trip-based Residential and Work Baseline VMT for the unincorporated areas of the County. The recently updated model has a base year of 2015 and a forecast year of 2045 (model updated December 2019). The base year 2015 model was utilized to estimate baseline VMT utilizing the updated land uses. The SJCOG RTDM produces trips by different trip purposes and modes, and outputs VMT throughout the County. To estimate trips associated with Residential VMT, all Home-Based vehicular trips (HBx<sup>3</sup>) were selected for evaluation of VMT per capita. To estimate trips associated with Work VMT, only Home-Base-Work (HBW) vehicular trips were selected for evaluation. Table 2.1 and Table 2.2 present the trip purposes used for Residential and Work VMT evaluations, respectively.

<sup>3</sup> HBx refers to any “Home based” trip, including work, shop, K-12, college, and other.

**Table 2.1 Selected Trip Purposes for Residential VMT**

HBW	Home based work	USED	USED	USED	x	x	x	
HBS	Home based shop	USED	USED	USED	x	x	x	
HBK	Home based K-12	USED	USED	USED	x	x	x	
HBC	Home based college	USED	USED	USED	x	x	x	
HBO	Home based other	USED	USED	USED	x	x	x	
WBO	Work based other	x	x	x	x	x	x	
OBO	Other based other	x	x	x	x	x	x	
HY	Highway Commercial	x	x	x	x	x	x	
TS	Light duty truck							x
TM	Medium duty truck							x
TH	Heavy duty truck							x

**Table 2.2 Selected Trip Purposes for Work VMT**

<b>HBW</b>	<b>Home based work</b>	<b>USED</b>	<b>USED</b>	<b>USED</b>	x	x	x	
HBS	Home based shop	x	x	x	x	x	x	
HBK	Home based K-12	x	x	x	x	x	x	
HBC	Home based college	x	x	x	x	x	x	
HBO	Home based other	x	x	x	x	x	x	
WBO	Work based other	x	x	x	x	x	x	
OBO	Other based other	x	x	x	x	x	x	
HY	Highway Commercial	x	x	x	x	x	x	
TS	Light duty truck	x	x	x				x
TM	Medium duty truck	x	x	x				x
TH	Heavy duty truck	x	x	x				x

### County External Trips

The sole use of the SJCOG model inputs and trip purposes for evaluation of VMT is limited to the boundary of the model area. To estimate baseline VMT, the total trip length outside of the County will need to be accounted for. Additional data has been supplemented to account for the total trip length and associated VMT outside of the model boundary. **The VMT were calculated for each Planning Area based on the TAZ's in unincorporated areas of each Planning Area to each TAZ within the model, including external links, which represent travel to areas outside of the model boundary.** VMT to and from areas outside of the model boundary have been accounted for by estimating the average trip length assigned to each external link. The average trip lengths were calculated based on US Census

Journey-to-Work data for San Joaquin County (LEHD data as described in the next section), as the majority of non-home-based-work trips from household-generated travel (school, shopping, personal business, recreation, other) are locally-serving and are contained within the modeling area. The LEHD data provides employer-based work destinations and home origins, which were used to calculate weighted average trip lengths to and from areas outside of the County, based on a primary roadway network and GIS analysis. These lengths are shown in Table 2.3, and are based on general cardinal directions, which were then applied to the appropriate model external link distances, discounting the average distance from each Planning Area, to calculate VMT for external travel for each Planning Area.

**Table 2.3 Weighted Average Trip Lengths for External Links (full lengths)**

North	50.1	39.3
South	54.2	39.4
East	29.1	29.1
West	63.3	69.5

### 2.3.2 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<sup>4</sup>. 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 county. Since the SJCOG 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. The

<sup>4</sup> "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](http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36(98)_FR.pdf)



LEHD data will be used to calculate off-model trip lengths and associated VMT for comparison against the model, as well as incorporating the LEHD data into the home-based-work trips within the SJCOG model (a SJCOG/LEHD model hybrid).

### **2.3.3 Shortest Path GIS Analysis Methodology**

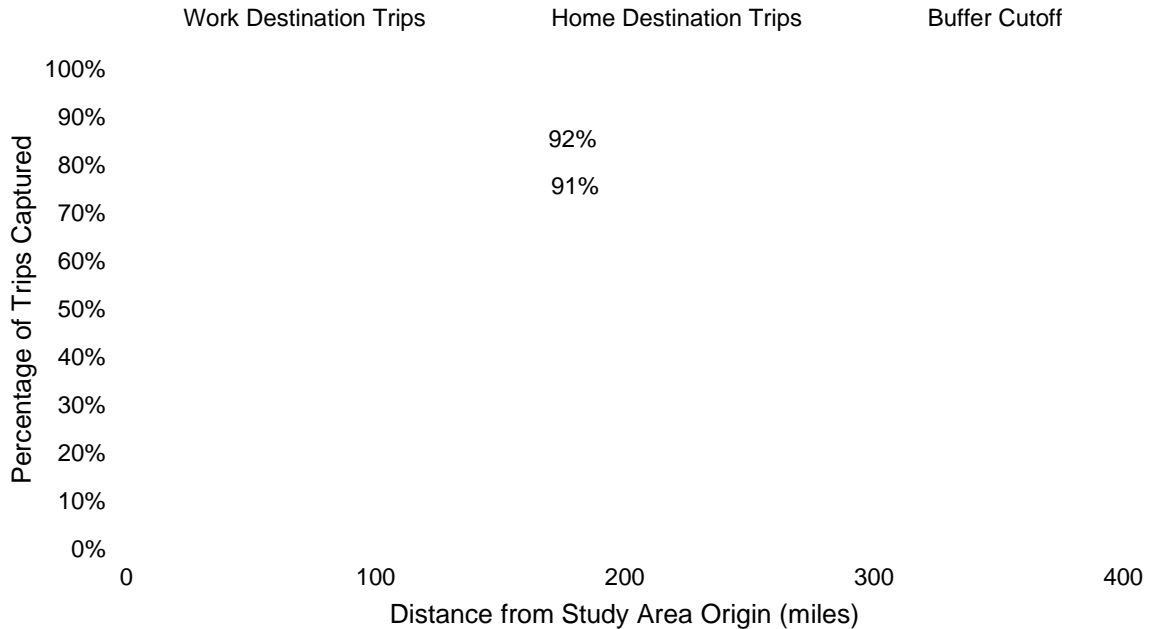
Shortest path analysis was performed using the 'Shortest path (point to layer)' network analysis within GIS software, for the centroid of each Planning Area as the start point (centroid of the City), and the path type set to 'Shortest'. The trip ends were defined as all centroids of each census designated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

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 destination (Work VMT). The total VMT for Work destination trips was divided by the population of each Planning Area, and the total VMT for Home destination trips was divided by the total number of jobs for each Planning Area to obtain the average VMT per capita and per employee respectively.

The primary work location reported by LEHD may not represent the actual physical location where workers work, therefore, the VMT per capita was also calculated utilizing only the trip paths within a 100 mile buffer, thus removing errant outliers in the LEHD data that inflate the average VMT per capita. Figure 2.1 shows that a 100-mile buffer captures 92% of Work destination trips and 91% of Home destination trips.



**Figure 2.1 Percentage of Work and Home Destination Trips Captured within Buffer Distance of each Planning Area**



**2.3.4 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 provides the following guidance 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 goes on to state that generally, the baseline is 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 baseline provided in this memorandum is estimated from the most recently updated SJCOG RTDM model, which has a base year of 2015. The preparation of the CEQA Transportation Analysis 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 every 5 years, concurrent with an update to the SJCOG RTP/SCS and RTDM, as recommended in this memorandum will be an important component of ensuring that the VMT thresholds remain defensible under CEQA.

## 2.4 Baseline VMT Geographic Considerations

The County has the discretion to determine thresholds including the appropriate geography to set thresholds by. The following are potential geography options for the County to set thresholds. Due to the variability of trip making characteristics and geographic context of certain areas of the County (i.e. urban vs rural), Baseline VMT rates have been calculated as part of this effort for the different areas identified. The SJCOG model and the LEHD data were utilized to evaluate VMT rates for both the Planning Area boundaries and the Traffic Impact Mitigation Fee (TIMF) areas. The SJCOG model was utilized to extract VMT information on the TAZ level, based on the Planning Area boundaries, and excluded incorporated areas. These were compared to the Unincorporated Regional Average VMT rates, as well as aggregated for the TIMF area VMT rates. Countywide including incorporated cities and other possible sub-area aggregations were not evaluated. Based on the VMT per service population results (i.e., population, employment etc), and discussion with County staff, GHD will look to potentially consolidate zones of like/similar trip length characteristics. The Planning Areas may be consolidated based on the Traffic Impact Mitigation Fee (TIMF) areas, an unincorporated regional average, or other sub-area aggregations. The following areas or sub-regions have been considered.

- **Unincorporated County** (the aggregation of unincorporated lands within the County)
- **Traffic Impact Mitigation Fee (TIMF) Areas** (lands outside the seven incorporated Cities within the County, and divided into five TIMF areas, as identified in the County's 2015 TIMF Update.)
  - Thornton-Delta
  - Lockeford-Lodi-Stockton
  - Linden-Escalon-Ripon
  - Lathrop-Manteca-Tracy
  - Mountain House
- **Planning Areas (Unincorporated)** (lands outside the seven incorporated Cities within the County, divided into the 12 Planning Areas, as identified in the County General Plan, and modified to conform to the geographies of the TAZ's within the regional **model**.)
  - Delta
  - Escalon
  - Lathrop
  - Lindon
  - Lockeford-Clements
  - Lodi
  - Manteca
  - Mountain House
  - Ripon
  - Stockton



- Thornton
- Tracy
- **Other Possible Sub-Area Aggregation**
  - Rural West – Thornton-Delta
  - Rural East – Lockeford-Clements-Linden-Escalon
  - Central – Lodi-Stockton-Manteca-Ripon-Lathrop

Figure 2.2 on the following page presents a map of both the 12 Planning Areas and the 5 TIMF Areas. Each Planning Area is outlined in red, and each of the TIMF areas are represented with different colors.

## **2.5 Draft Baseline VMT Analysis Findings**

This section presents the various findings of the VMT analyses conducted, based on the methodologies previously described, to evaluate and estimate baseline VMT.

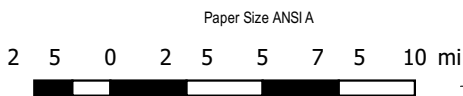
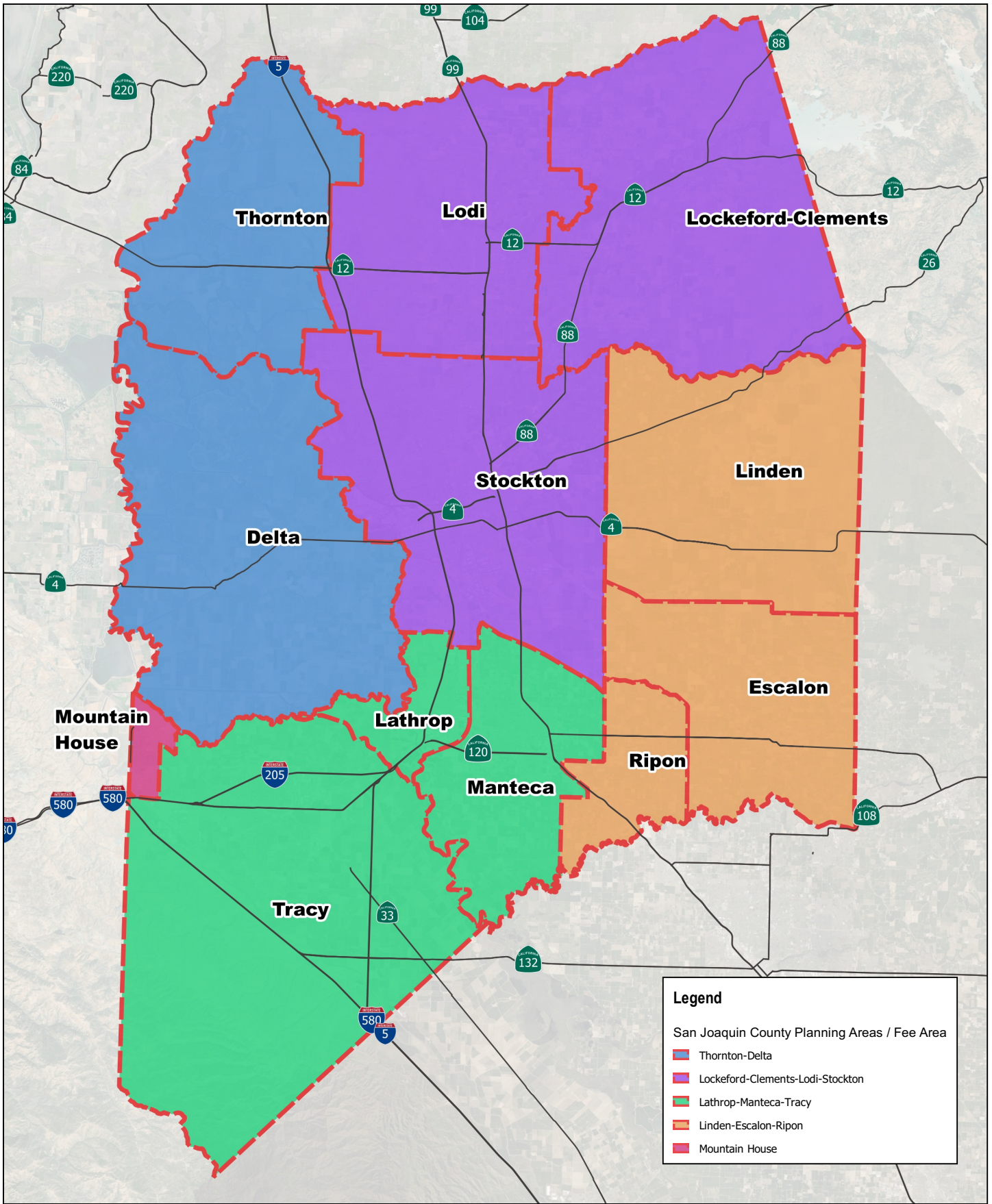
### **2.5.1 SJCOG Model (VMIP-2) VMT Findings**

Based on the methodology for estimating Baseline VMT as described within this section, Table 2.4 and Table 2.5, on Page 17, present a summary of the Baseline VMT analysis utilizing the SJCOG model for both Residential and Work VMT by Planning Area (unincorporated areas). The VMT rates per Planning Area have been colorized to show green as the lowest number and red as the highest number. Table 2.6 and Table 2.7, on Page 18, present a summary of the Baseline VMT analysis utilizing the SJCOG model for both Residential and Work VMT by TIMF (unincorporated areas).

As shown, the Unincorporated Regional Average baseline VMT rates are:

Residential = 26.63 VMT per capita, and

Work = 19.05 VMT per employee.



Paper Size ANSIA  
 Map Projection: Mercator Auxiliary Sphere  
 Horizontal Datum: WGS 1984  
 Grid: WGS 1984 Web Mercator Auxiliary Sphere



COUNTY OF SAN JOAQUIN  
 VMT THRESHOLD STUDY

**SAN JOAQUIN  
 PLANNING AREAS**

Project No. 11210023  
 Revision No. -  
 Date: April 13, 2020

**FIGURE 2.2**



**Table 2.4 SJCOG Model Results by Planning Area– Residential VMT**

Planning Area	Residential (Outbound)		
	Residential VMT	Model Unincorporated Population	VMT per Capita
Delta	26,955	1,097	24.57
Escalon	242,488	8,367	28.98
Lathrop	27,836	1,209	23.03
Linden	187,029	5,545	33.73
Lockeford-Clements	286,145	11,206	25.54
Lodi	457,607	19,975	22.91
Manteca	392,517	16,571	23.69
Mountain House	416,082	21,168	19.66
Ripon	84,291	3,650	23.10
Stockton	2,058,485	75,962	27.10
Tracy	595,344	14,292	41.66
Thornton	59,341	2,464	24.08
<b>Total (Unincorporated Regional Average)</b>	<b>4,834,121</b>	<b>181,506</b>	<b>26.63</b>

**Table 2.5 SJCOG Model Results by Planning Area – Work VMT**

Planning Area	Employment (Inbound)		
	Work VMT	Model Unincorporated Employment	VMT per Employee
Delta	30,383	2,016	15.07
Escalon	65,992	3,519	18.75
Lathrop	5,946	389	15.31
Linden	75,631	3,612	20.94
Lockeford-Clements	85,513	4,341	19.70
Lodi	228,802	11,388	20.09
Manteca	78,516	3,180	24.69
Mountain House	45,760	1,575	29.05
Ripon	39,735	2,149	18.49
Stockton	461,163	29,091	15.85
Tracy	228,403	9,561	23.89
Thornton	23,376	1,053	22.19
<b>Total (Unincorporated Regional Average)</b>	<b>1,369,221</b>	<b>71,875</b>	<b>19.05</b>



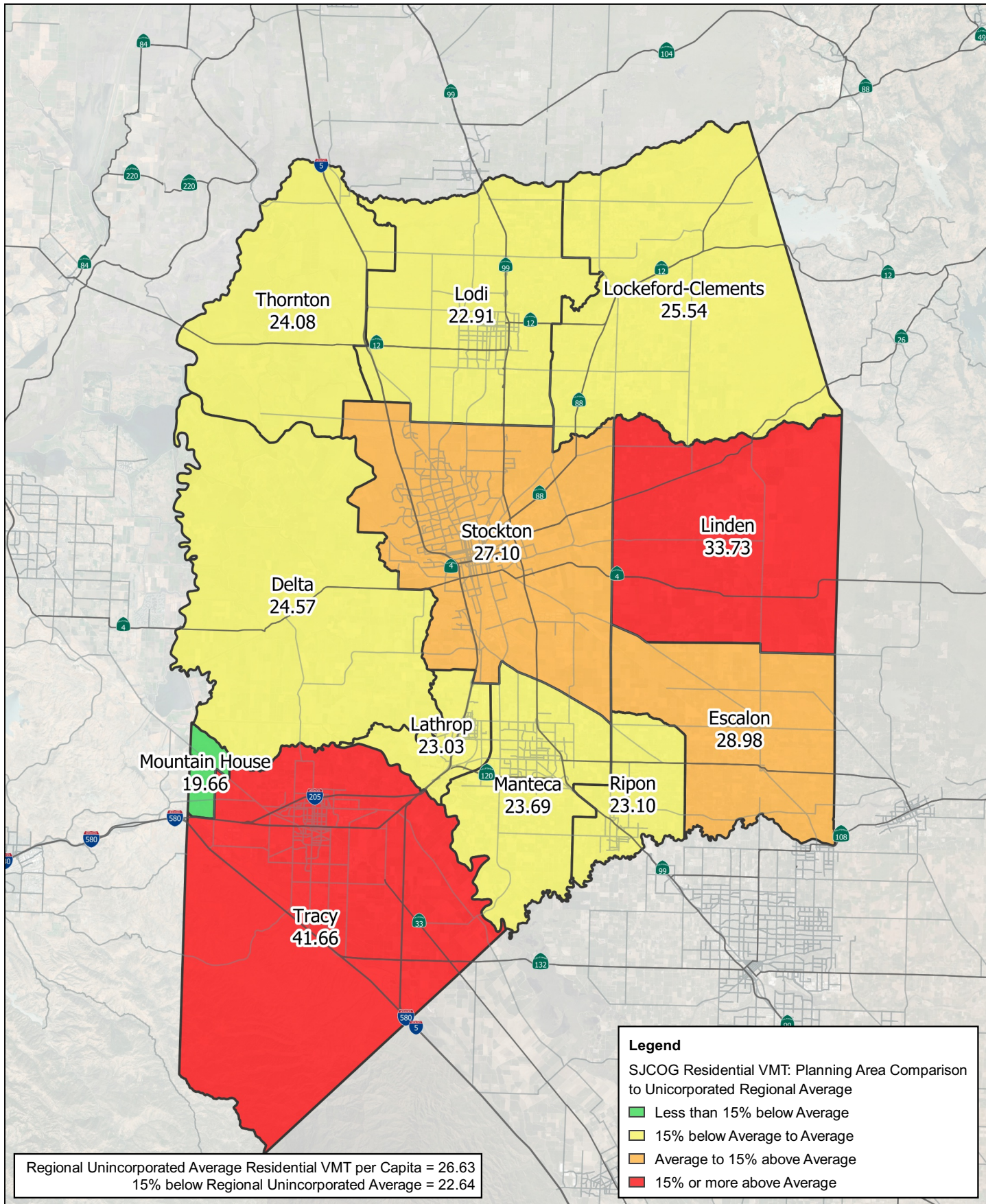
**Table 2.6 SJCOG Model Results by TIMF Area – Residential VMT**

TIMF Area	Residential (Outbound)		
	Residential VMT	Model Unincorporated Population	VMT per Capita
Thornton-Delta	86,297	3,562	24.23
Lockeford-Clements-Lodi-Stockton	2,802,237	107,144	26.15
Lathrop-Manteca-Tracy	1,015,697	32,072	31.67
Linden-Escalon-Ripon	513,808	17,561	29.26
Mountain House	416,082	21,168	19.66
<b>Total (Unincorporated Regional Average)</b>	<b>4,834,121</b>	<b>181,506</b>	<b>26.63</b>

**Table 2.7 SJCOG Model Results by TIMF Area – Work VMT**

TIMF Area	Employment (Inbound)		
	Work VMT	Model Unincorporated Employment	VMT per Employee
Thornton-Delta	53,760	3,070	17.51
Lockeford-Clements-Lodi-Stockton	775,478	44,821	17.30
Lathrop-Manteca-Tracy	312,865	13,130	23.83
Linden-Escalon-Ripon	181,358	9,280	19.54
Mountain House	45,760	1,575	29.05
<b>Total (Unincorporated Regional Average)</b>	<b>1,369,221</b>	<b>71,875</b>	<b>19.05</b>

Figure 2.3 through Figure 2.6 present the Residential and Work VMT rates for both the Planning Areas and TIMF areas. These maps have been colorized to show the area’s comparison to the Unincorporated Regional Average.

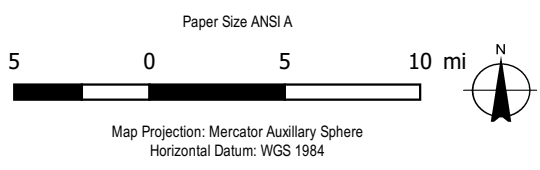


Regional Unincorporated Average Residential VMT per Capita = 26.63  
 15% below Regional Unincorporated Average = 22.64

**Legend**

SJCOG Residential VMT: Planning Area Comparison to Unincorporated Regional Average

- Less than 15% below Average
- 15% below Average to Average
- Average to 15% above Average
- 15% or more above Average

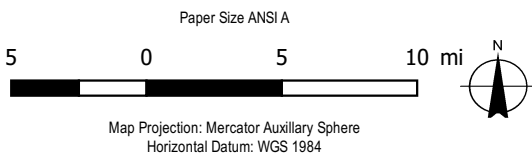
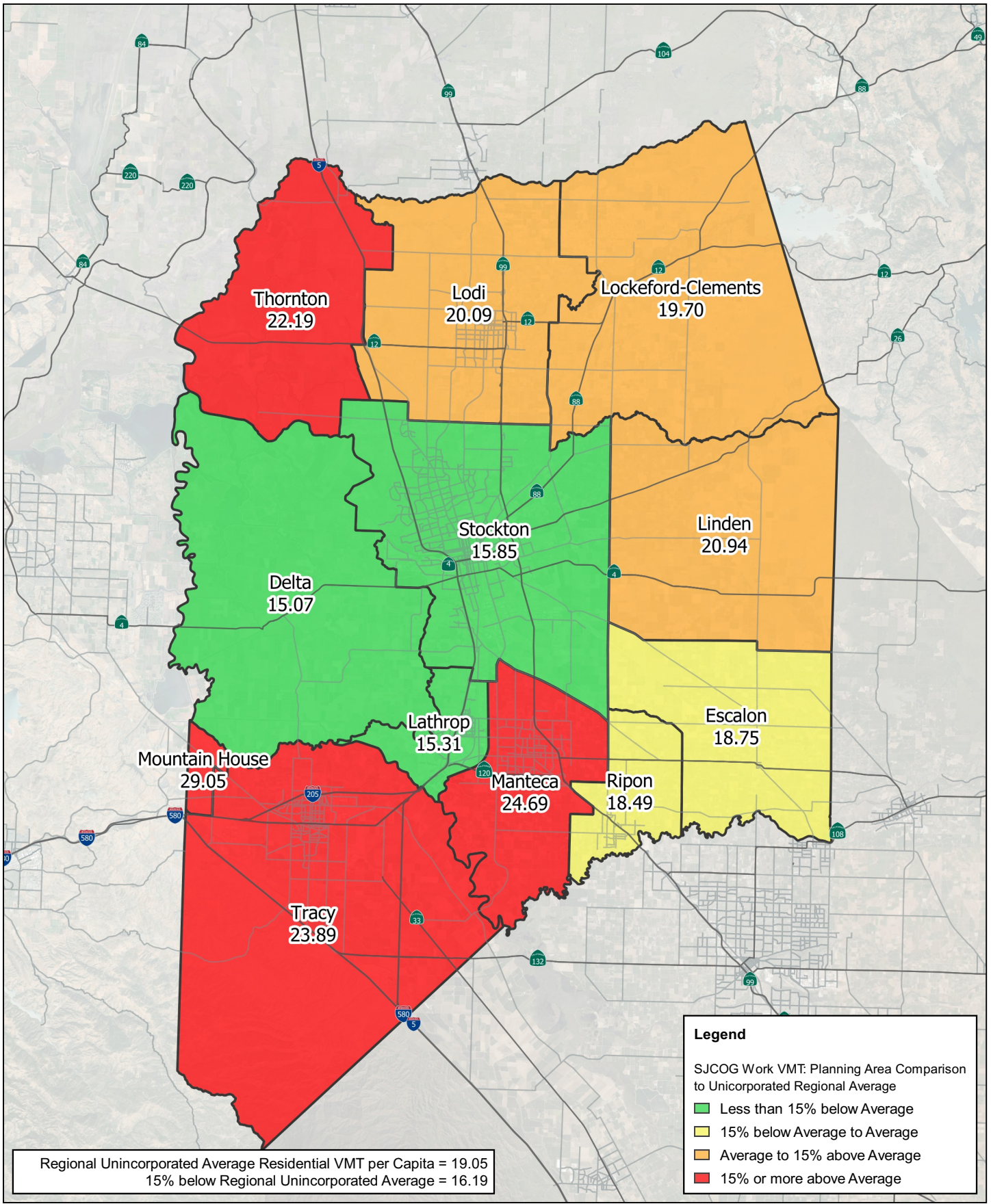


COUNTY OF SAN JOAQUIN  
 VMT THRESHOLD STUDY

**COMPARISON OF RESIDENTIAL VMT TO  
 COUNTYWIDE UNINCORPORATED  
 AVERAGE, BY PLANNING AREA**

11210023 11210023  
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**FIGURE 2.3**



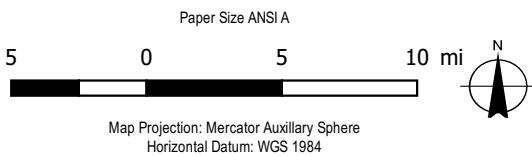
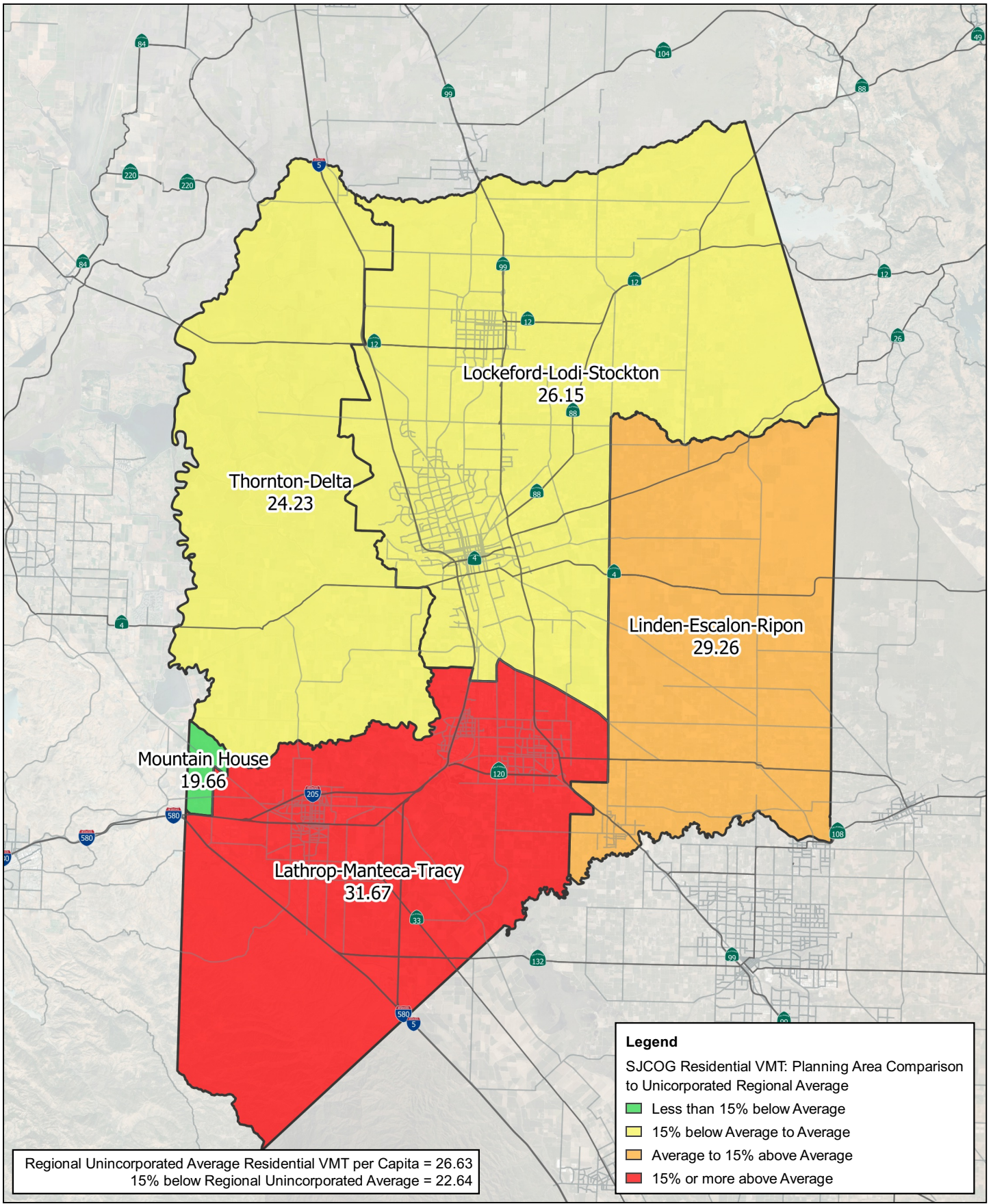
COUNTY OF SAN JOAQUIN  
 VMT THRESHOLD STUDY

**COMPARISON OF WORK VMT  
 TO COUNTYWIDE UNINCORPORATED  
 AVERAGE, BY PLANNING AREA**

11210023 11210023  
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**FIGURE 2.4**

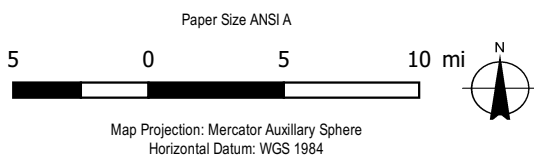
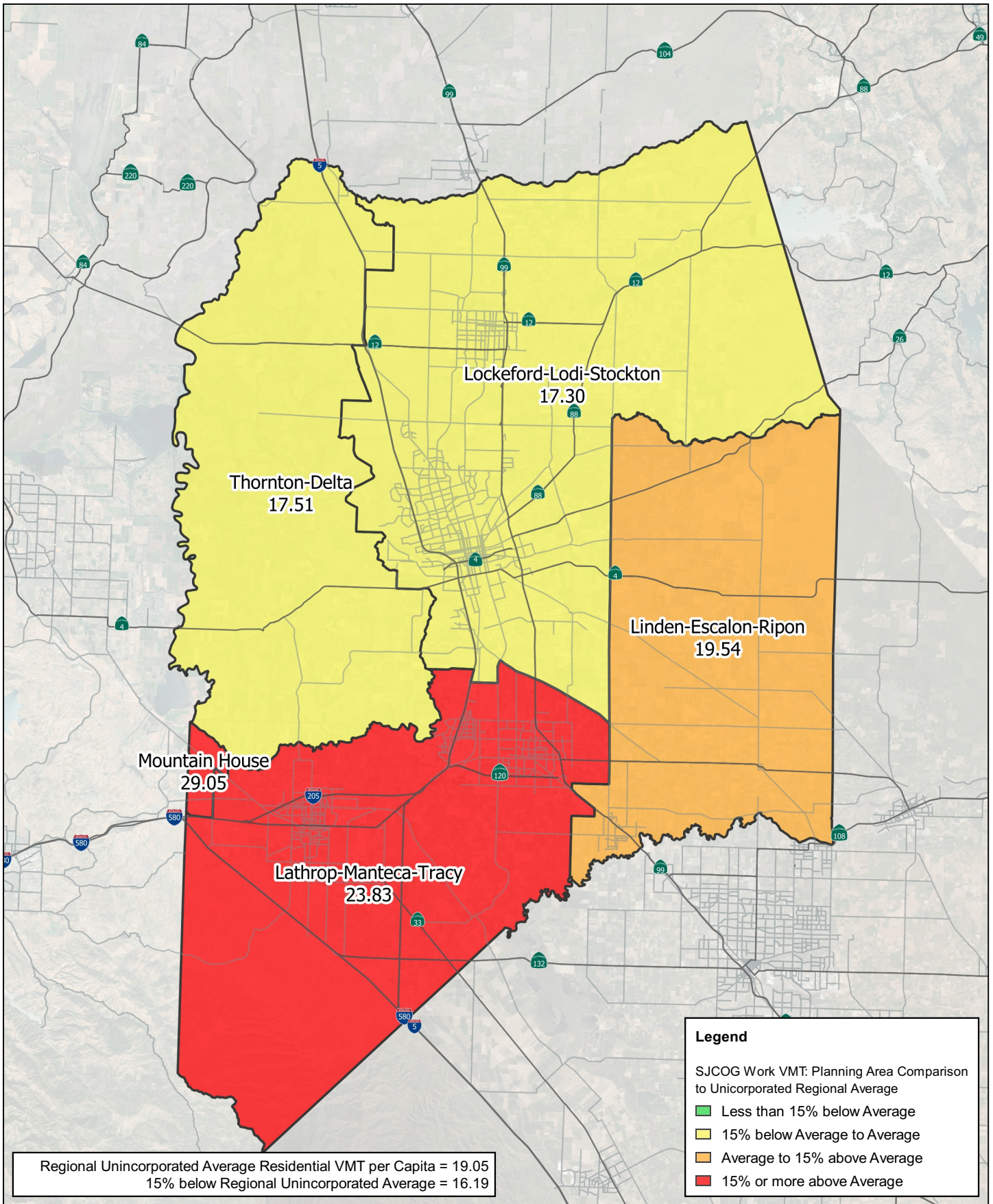




COUNTY OF SAN JOAQUIN  
 VMT THRESHOLD STUDY  
**COMPARISON OF RESIDENTIAL VMT TO  
 COUNTYWIDE UNINCORPORATED  
 AVERAGE, BY FEE AREA**

11210023 11210023  
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**FIGURE 2.5**



COUNTY OF SAN JOAQUIN  
VMT THRESHOLD STUDY

**COMPARISON OF WORK VMT  
TO COUNTYWIDE UNINCORPORATED  
AVERAGE, BY FEE AREA**

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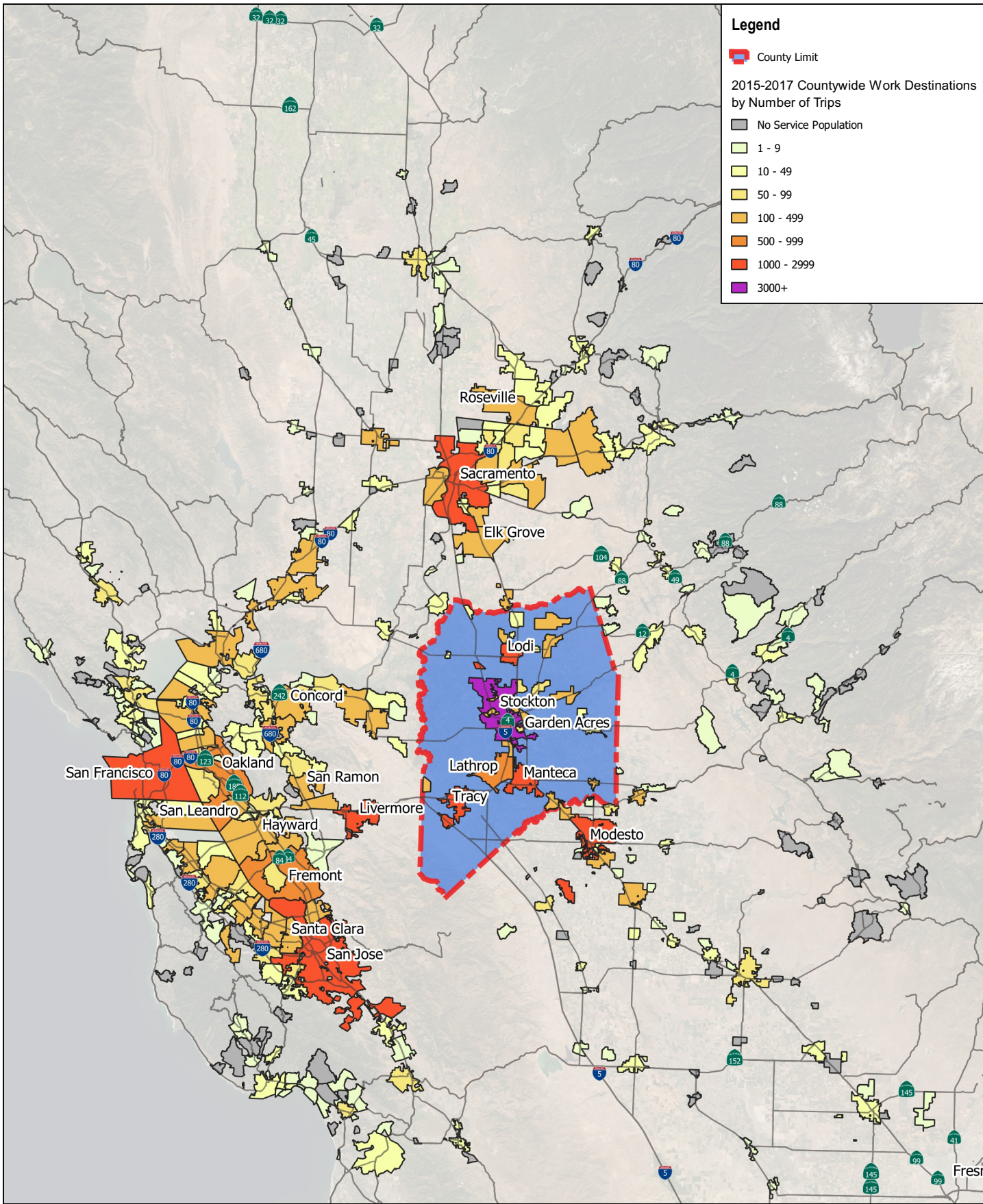
**FIGURE 2.6**



### **2.5.2 Shortest Path Analysis with LEHD Data – VMT Findings**

Figure 2.7 presents the Work Destinations of Countywide Residents (outbound trips), and Figure 2.8 presents the Home Origins of Countywide Employees (inbound trips).

Table 2.8 presents the top 20 locations where County unincorporated residents work, and Table 2.9 presents the top 20 home locations of unincorporated County employees. Based on the LEHD data, about 56% of the County’s residents have work locations outside of the County (and within 100 miles on average), and about 46% of the County’s employees have a home location outside of the County (and within 100 miles on average).



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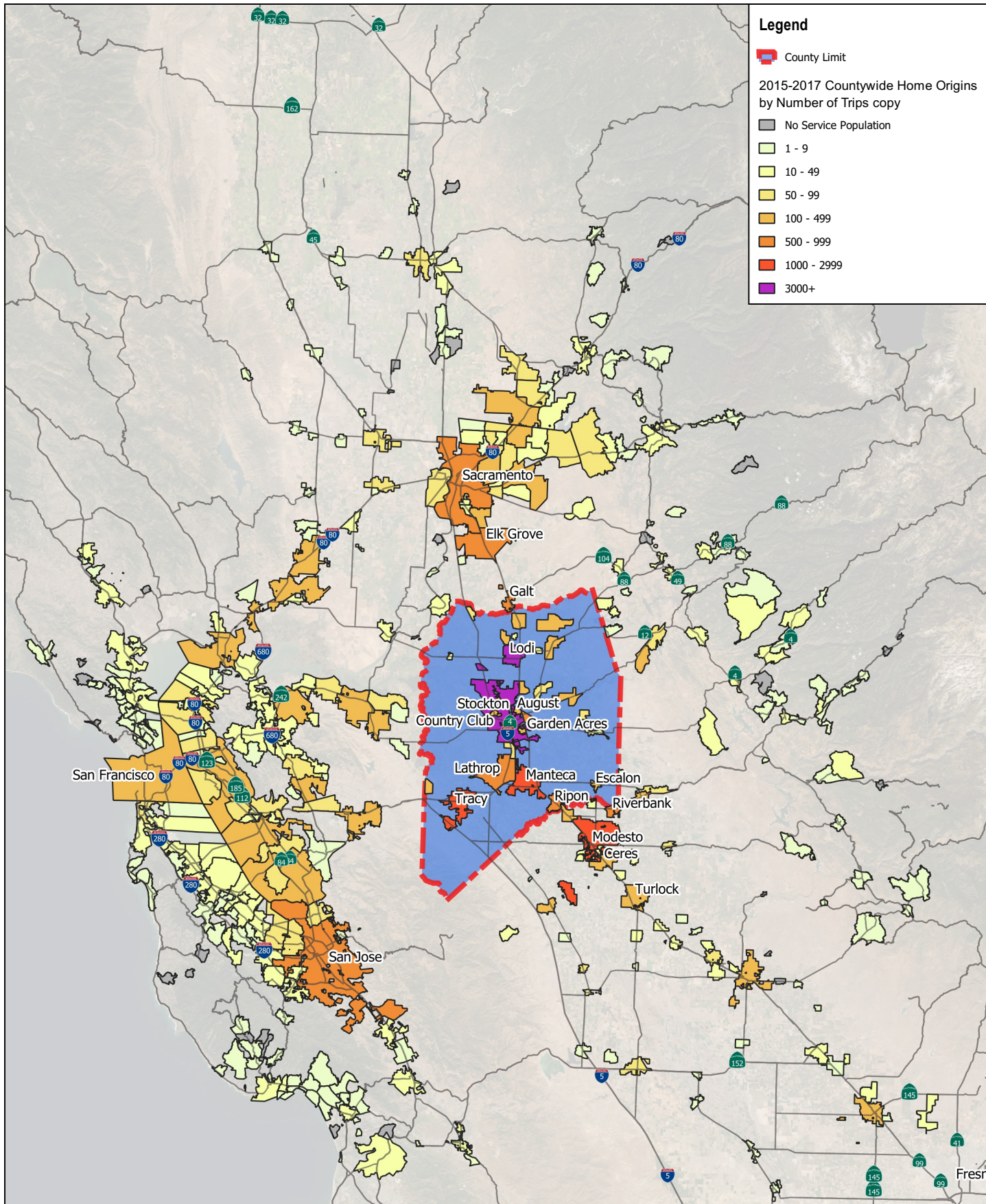
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COUNTY OF SAN JOAQUIN  
 VMT THRESHOLD STUDY

Project No. 11210023  
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 Date: April 22, 2020

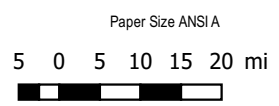
**Unincorporated San Joaquin County  
 Work Destinations of Residents  
 (Outbound)**

**FIGURE 2.7**



**Legend**

- County Limit
- 2015-2017 Countywide Home Origins by Number of Trips copy
- No Service Population
- 1 - 9
- 10 - 49
- 50 - 99
- 100 - 499
- 500 - 999
- 1000 - 2999
- 3000+



COUNTY OF SAN JOAQUIN  
VMT THRESHOLD STUDY

**Unincorporated San Joaquin County  
Home Origins of Employees  
(Inbound)**

Project No. 11210023  
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Date. April 22, 2020

**FIGURE 2.8**



**Table 2.8 Top 20 Work Destinations of San Joaquin County Residents (Outbound)**

Location	Average Miles	Outbound Jobs	Home VMT
<b>Stockton</b>	<b>17.8</b>	<b>11,946</b>	<b>198,922.18</b>
<b>Lodi</b>	<b>23.3</b>	<b>2,823</b>	<b>58,746.56</b>
<b>Tracy</b>	<b>24.5</b>	<b>2,006</b>	<b>62,231.60</b>
Modesto	30.1	1,723	93,002.74
Sacramento	57.1	1,595	165,779.78
Livermore	40.7	1,371	83,648.05
San Jose	77.0	1,325	189,732.16
San Francisco	79.3	1,202	192,286.71
<b>Manteca</b>	<b>18.4</b>	<b>1,176</b>	<b>29,770.57</b>
Oakland	66.3	751	94,371.81
Fremont	61.6	633	67,508.31
<b>Lathrop</b>	<b>18.3</b>	<b>604</b>	<b>17,704.47</b>
<b>Garden Acres</b>	<b>17.7</b>	<b>462</b>	<b>5,258.07</b>
Elk Grove	49.9	455	37,550.61
Hayward	61.8	440	49,123.11
Fresno	77.2	341	49,930.60
Roseville	73.2	341	45,848.80
Santa Clara	62.3	319	36,716.23
Other Locations	<100 mi	12,296	1,185,322.43
<b>Total (100-mi)</b>	<b>-</b>	<b>41,809</b>	<b>2,663,454.77</b>
<b>VMT per capita</b>			<b>15.65</b>
Fresno	121.7	363	89,384.27
Los Angeles	330.3	323	213,762.62
Other Locations	>100 mi	4,957	2,195,422.62
<b>Total (no buffer)</b>	<b>-</b>	<b>47,452</b>	<b>5,162,024.28</b>
<b>VMT per Capita</b>			<b>30.33</b>



**Table 2.9 Top 20 Home Origins of San Joaquin County Employees (Inbound)**

Location	Average Miles	Inbound Jobs	Work VMT
<b>Stockton</b>	<b>17.8</b>	<b>10,584</b>	<b>221,334.41</b>
<b>Lodi</b>	<b>23.3</b>	<b>3,543</b>	<b>72,743.31</b>
<b>Manteca</b>	<b>18.4</b>	<b>2,494</b>	<b>61,261.52</b>
Tracy	24.5	1,885	40,136.94
Modesto	30.1	1,699	84,836.42
Galt	33.1	757	27,952.95
Sacramento	57.1	737	78,353.72
Garden Acres	17.7	715	13,196.47
<b>Ripon</b>	<b>21.9</b>	<b>708</b>	<b>17,040.93</b>
San Jose	77.0	694	99,337.02
Lathrop	18.3	590	15,609.46
<b>Elk Grove</b>	<b>49.9</b>	<b>587</b>	<b>51,206.42</b>
<b>Riverbank</b>	<b>29.5</b>	<b>502</b>	<b>20,365.94</b>
August	17.3	442	7,251.31
Country Club	18.4	429	8,944.59
Escalon	24.7	400	11,776.01
Turlock	41.9	366	28,582.38
Ceres	33.9	333	19,394.96
San Francisco	79.3	312	47,891.24
Other Locations	<100 mi	11,369	1,053,367.84
<b>Total (100-mi)</b>	<b>-</b>	<b>39,146</b>	<b>1,980,583.83</b>
<b>VMT per Employee</b>			<b>50.59</b>
Los Angeles	330.3	241	161,330.55
Other Locations	>100 mi	5,139	2,243,819.15
<b>Total (no buffer)</b>	<b>-</b>	<b>44,400</b>	<b>4,385,733.53</b>
<b>VMT per Employee</b>			<b>98.78</b>

Table 2.10 and Table 2.11 present summaries of the Residential VMT results and Work VMT results respectively by Planning Area, based on the shortest path analysis of the unincorporated LEHD data. Table 2.12 and Table 2.13 present the Residential and Work VMT results by TIMF Area, based on the shortest-path analysis of the unincorporated LEHD and US Census data. Based on US Census data (American Community Survey 2018 1-year estimates), the total population for the County is 752,660 people, with approximately 170,179 population in the unincorporated County. US Census data were utilized to evaluate the residential VMT per capita, and an average of 2015-2017 LEHD data was used to determine VMT per employee.



**Table 2.10 Shortest Path-LEHD Analysis Results by Planning Area– Residential VMT**

Planning Area	Residential VMT (Outbound)				Residential VMT Comparison to Countywide Unincorporated Average
	Unincorporated Population (LEHD)	Residential VMT (≤100 mi)	Residential VMT per Capita (≤100 mi)		
Delta	1,528	24,905.2	16.30		4%
Escalon	6,148	115,422.6	18.77		20%
Lathrop	0	17,136.6	-		-
Linden	5,941	111,754.1	18.81		20%
Lockeford-Clements	11,812	240,466.1	20.36		30%
Lodi	18,997	307,269.2	16.17		3%
Manteca	32,389	158,904.4	4.91		-69%
Mountain House	15,869	224,362.8	14.14		-10%
Ripon	2,298	64,734.4	28.17		80%
Stockton	48,538	1,062,651.2	21.89		40%
Thornton	14,237	34,502.9	2.42		-85%
Tracy	12,422	301,345.2	24.26		55%
<b>TOTAL / AVERAGE</b>	<b>170,179</b>	<b>2,663,455</b>	<b>15.65</b>		

**Table 2.11 Shortest Path-LEHD Analysis Results by Planning Area– Work VMT**

Planning Area	Work VMT (Inbound)				Work VMT Comparison to Countywide Unincorporated Average
	Number of Unincorporated Area Jobs (Work) (LEHD)	Work VMT (≤100 mi)	Work VMT per Employee (≤100 mi)		
Delta	969	45,614.6	47.07		-7%
Escalon	1,148	50,506.9	44.00		-13%
Lathrop	1,193	39,947.7	33.49		-34%
Linden	1,587	86,634.4	54.59		8%
Lockeford-Clements	2,478	151,398.0	61.10		21%
Lodi	5,129	197,409.3	38.49		-24%
Manteca	1,842	86,346.4	46.88		-7%
Mountain House	607	28,048.3	46.21		-9%
Ripon	1,434	63,429.8	44.23		-13%
Stockton	14,634	654,286.1	44.71		-12%
Thornton	514	22,339.1	43.46		-14%
Tracy	7,611	554,623.3	72.87		44%
<b>TOTAL / AVERAGE</b>	<b>39,146</b>	<b>1,980,584</b>	<b>50.59</b>		





**Table 2.12 Shortest Path-LEHD Analysis Results by TIMF Area– Residential VMT**

TIMF Area	Residential (Outbound)		
	Residential VMT	Model Unincorporated Population	VMT per Capita
Thornton-Delta	15,765	59,408	3.77
Lockeford-Clements-Lodi-Stockton	79,347	1,610,386	20.30
Lathrop-Manteca-Tracy	44,811	477,386	10.65
Linden-Escalon-Ripon	14,387	291,911	20.29
Mountain House	15,869	224,363	14.14
<b>Total (Unincorporated Regional Average)</b>	<b>170,179</b>	<b>2,663,455</b>	<b>15.65</b>

**Table 2.13 Shortest Path-LEHD Analysis Results by TIMF Area– Work VMT**

TIMF Area	Employment (Inbound)		
	Work VMT	Model Unincorporated Employment	VMT per Employee
Thornton-Delta	1,483	67,954	45.82
Lockeford-Clements-Lodi-Stockton	22,241	1,003,093	45.10
Lathrop-Manteca-Tracy	10,646	680,917	63.96
Linden-Escalon-Ripon	4,169	200,571	48.11
Mountain House	607	28,048	46.21
<b>Total (Unincorporated Regional Average)</b>	<b>39,146</b>	<b>1,980,584</b>	<b>50.59</b>

### 2.5.3 Baseline VMT Considerations

The LEHD data showed extensive interaction with areas outside of the County, including the Bay Area/East Bay. Based on the SJCOG model results, the reported VMT is much lower when utilizing the SJCOG inputs (land uses and resulting trips by trip purpose). This is due to the model resulting in shorter distances to match the origin-destination pairs for home-based-work trips.

Utilizing the LEHD data provides an accurate assessment of the origin-destination pairs for home-based-work trips. However, the employer-based data leaves room for error when employment locations (typically for large companies, headquarters) may not be accurate, and the actual workplace may be more localized. US Census data shows that the average travel time to work is 37.2 minutes for San Joaquin County; this includes 56.5% having a commute of less than 25 minutes, 30.7% having a commute time between 25 and 60 minutes, and 12.8% of workers having a travel time of 60+ minutes (2018 American Community Survey, including incorporated cities). For reference, travel time between Stockton and Concord is approximately 1 hour without traffic congestion. The US Census data shows that majority of commute trips are relatively localized. Other residential-based trips (shopping, school, etc.) are typically more locally-oriented than employment, and the regional model accounts for those “internal” trips.



### ***Sub-Area Considerations***

Based off of the VMT metrics derived from the SJCOG model presented by Planning Area, the following have been identified for aggregation into sub-areas for establishing baseline VMT. These would be used as opposed to an unincorporated regional average. Establishing baseline VMT metrics on a sub-area basis is recommended for San Joaquin County due to the disparity in trip characteristics for different areas of the County (i.e. the Tracy area has a majority of commute trips to and from the Bay Area, whilst areas in the north and east of the County have more localized trips).

1. **North:** Lodi-Lockeford-Clements-Thornton
  - i) All three planning areas have below-average VMT rates for residential VMT, and above-average VMT rates for work.
2. **West-Central:** Delta-Stockton
  - i) Both Stockton and Delta planning areas have near-average VMT rates for residential VMT, and below-threshold (less than 15% below average) work VMT rates.
3. **East:** Escalon-Linden
  - i) Both Escalon and Linden planning areas have above-average VMT rates for residential VMT, and near average (less than 15% below average) work VMT rates.
4. **South-Central:** Lathrop-Manteca-Ripon
  - i) These three planning areas all have slightly-below-average (but not below-threshold) VMT rates for residential VMT, but have varying VMT rates for work VMT.
5. **South:** Tracy-Mountain House
  - i) Tracy and Mountain House planning areas all have varying VMT rates for residential VMT, but both have far-above-average (greater than 15% above average) VMT rates for work VMT.

Table 2.14 and Table 2.15 presents the baseline Residential and Work VMT results from the SJCOG model for each of the proposed sub-areas. Each sub-area is also compared to the unincorporated regional average VMT rate.



**Table 2.14 Baseline Residential VMT: Sub-Area Aggregations (SJCOG Model Results)**

Sub-Area	Residential (Outbound)			
	Residential VMT	Model Unincorporated Population	Baseline VMT per Capita	Comparison to Average
Delta-Stockton	2,085,440	77,059	27.06	2%
Lodi-Lockeford-Thornton	803,093	33,645	23.87	-10%
Escalon-Linden	429,517	13,912	30.87	16%
Manteca-Ripon-Lathrop	504,644	21,430	23.55	-12%
Tracy-Mountain House	1,011,426	35,460	28.52	7%
<b>Total (Unincorporated Regional Average)</b>	<b>4,834,120</b>	<b>181,506</b>	<b>26.63</b>	<b>-</b>

**Table 2.15 Baseline Work VMT: Sub-Area Aggregations (SJCOG Model Results)**

Sub-Area	Employment (Inbound)			
	Work VMT	Model Unincorporated Employment	Baseline VMT per Employee	Comparison to Average
Delta-Stockton	491,546	31,107	15.80	-17%
Lodi-Lockeford-Thornton	337,691	16,782	20.12	6%
Linden-Escalon	141,623	7,131	19.86	4%
Manteca-Ripon-Lathrop	124,197	5,718	21.72	14%
Tracy-Mountain House	274,163	11,136	24.62	29%
<b>Total (Unincorporated Regional Average)</b>	<b>1,369,220</b>	<b>71,874</b>	<b>19.05</b>	<b>-</b>

The sub-area aggregation of different Planning Areas was considered, as shown in the tables above, but the results did not present a significant variability between the areas. The use of a district-based threshold structure for VMT by 12 Planning Areas would not be practicable for the County either. The County ultimately has decided to utilize a single geography, the unincorporated County average, to establish the baseline VMT metrics.

#### 2.5.4 Baseline VMT Recommendation

- GHD recommends using the SJCOG model to calculate and establish Baseline VMT. The US Census data for unincorporated population is represented for approximately 94% of the SJCOG model population. The LEHD outbound home-based-work trips presented lower results for Residential VMT per capita rates compared to the SJCOG model (15.65 from LEHD analysis, and 26.63 from Model).
- Variations in home-based-work inbound trips and in total employment, between SJCOG model and LEHD data, exist on the aggregate level, leaving a large disparity between the total number of trips



being counted between the LEHD data and the regional model (50.59 from LEHD analysis, and 19.05 from Model).

- GHD recommends using an Unincorporated Countywide Average VMT baseline and threshold structure rather than a District-based (Planning Area, Fee Area, or sub-area) or a Regional (including Cities) structure. **Using a single unincorporated County average VMT baseline would provide a consistent and streamlined approach for VMT analysis under CEQA.**

## 2.6 VMT Significance Thresholds Determination

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.*

The County has the discretion to set or apply their own thresholds of significance, which can be formally adopted thresholds consistently applied to all projects, provided the decision to adopt those thresholds is supported by substantial evidence. 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. Section 21099 of the Public Resources Code states that the criteria for determining the significance of transportation impacts must promote: (1) reduction of greenhouse gas emissions; (2) development of multimodal transportation networks; and (3) a diversity of land uses. It further directed OPR to prepare and develop criteria for determining significance.

OPR recommends a 15% reduction from baseline VMT per capita or per employee, for residential and work projects, and no net increase in total VMT for retail projects, which is consistent with SB 743's direction to select a threshold that will help the State achieve its climate goals. While OPR's Technical Advisory is not binding on public agencies, a significance threshold for the County should be selected that aligns with state law on all three of the aforementioned criteria. **The County has decided to utilize a 15% reduction in baseline VMT per capita or per employee as the threshold of significance for residential and work projects, and no net increase in total VMT for retail projects.** These VMT thresholds are recommended based on the most recent guidance on VMT thresholds from OPR and State climate goals. The VMT analysis completed for this study serves as substantial evidence for the validity of the VMT thresholds, and subsequent screening criteria, recommended for the County of San Joaquin. 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.



### **2.6.1 Baseline VMT and Threshold Recommendations**

The recommended unincorporated County average baseline VMT and thresholds values are:

- Baseline Residential VMT: 26.6 per capita
  - Threshold of 15% below baseline of 22.6 per capita
- Baseline Work VMT: 19.1 per employee
  - Resulting threshold of 15% below baseline of 16.2 per employee
- Retail Threshold: No net increase in Total VMT



### 3. Project Screening Criteria

The purpose of this section is to review guidance, resources and methods for evaluating screening criteria that can be used for determining whether development projects within the County are required to complete a VMT analysis. The screening process, which in part is based on the VMT thresholds previously established, will identify project types or locations that will be “screened out” from VMT analysis. Certain projects under the screening criteria would be presumed to have a less than significant impact on VMT and would not require VMT analysis.

The literature review includes the OPR *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) and the Caltrans *VMT-Focused Transportation Impact Study Guide* (May 2020). The data sources and technical review include the SJCOG Regional Travel Demand Model (RTDM), US Census’s Longitudinal Employer-Housing Dynamics (LEHD) data, and published data for the region.

#### 3.1 Recommended Screening Criteria

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. This section assesses the criteria and provides recommendations on how they may be applied for San Joaquin County.

- A. Small Projects** that are consistent with the Sustainable Communities Strategy (SCS) or General Plan and generate or attract fewer than 110 daily trips, consistent with trip generation associated with projects eligible for Categorical Exemptions under CEQA. **GHD recommends the County 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 County adopt this screening criteria, utilizing the baseline and thresholds the County determines.**
- C. Transit Proximity** Certain projects within ½ mile of an existing major transit stop<sup>5</sup> or an existing stop along a high quality transit corridor<sup>6</sup>. However, this will not apply if information indicates that

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<sup>5</sup> “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)

<sup>6</sup> 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.”).



the project will still generate high levels of VMT. **GHD recommends the County adopt this screening criteria.**

**D. Affordable Housing** development in infill locations. **GHD recommends deferring adoption of a low-income housing screening threshold until a study can [redacted] low-income housing within the County of San Joaquin generates 15% less trips than other housing types.**

**E. Locally-serving Retail** projects, typically less than 50,000 square feet. **GHD Recommends the County adopt this screening criteria. GHD also recommends that the County retain the ability to require a market study if in the County’s judgement a “locally serving” determination is questionable on a project by project basis.**

**F. Transportation Projects** – 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 in Section 3.8.1. Consistent with Caltrans’ *Draft Transportation Analysis under CEQA*, if the project is expected to decrease or **have on impact** on VMT or, if 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.*”, then the project would not require a VMT analysis. **GHD recommends that the County adopts this screening criteria.**

### 3.2 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 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 County establish the following policy for screening small projects, per OPR guidance.

*“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 (10<sup>th</sup> Edition) include but are not limited to the following:*

- a) 9 Single Family Units
- b) 20 Multifamily Units
- c) 1,000 SF Retail
- d) 10,000 SF Office
- e) 22,000 SF Industrial

CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area (CEQA Guidelines, § 15301, subd. (e)(2)). Typical project types for which trip generation increases



relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

### 3.3 Map-Based Screening

Residential and Work type projects that are located in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT. Therefore, maps can be used to illustrate areas that are currently below the VMT threshold (15% or less below baseline VMT), and screen out residential and office projects from needing to prepare a detailed VMT analysis, as these projects can be presumed to have a less than significant impact on VMT.

The criteria utilized to determine if a TAZ is screened from VMT analysis includes:

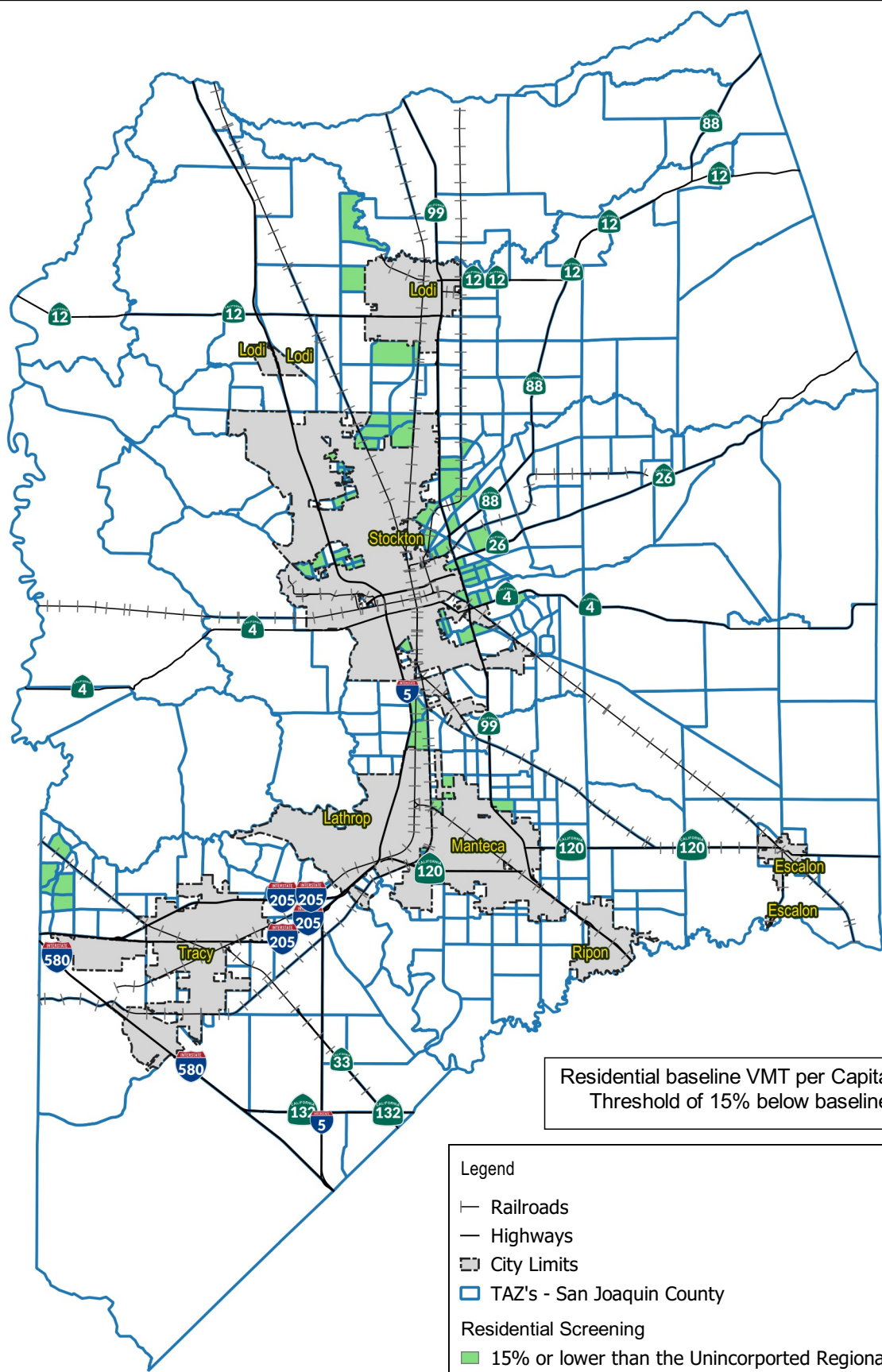
- VMT rate is 15% or lower than the unincorporated regional average, and
- TAZ has a density per service population of >500 people/sq.mi. or >250 jobs/sq.mi. (i.e. within a dense urban area or community).

TAZ's with very low or no service population or employment do not have sufficient data to determine a screening basis. TAZ's within a dense urban environment generally are VMT efficient and are screened out.

The following maps have been developed utilizing the SJCOG Regional Travel Demand Model to identify VMT efficient areas which residential or work-based projects could be screened out from a VMT analysis. These areas where land use projects would be presumed to have a less than significant impact are depicted in green on the following maps. 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 VMT analysis would be necessary to make that determination.

Figure 3.1 presents the screening map for residential projects, showing an overview of the County. Figure 3.2 presents the screening map for work projects, showing an overview of the County. Screening maps showing areas of the County in lower scale are provided in Appendix A.





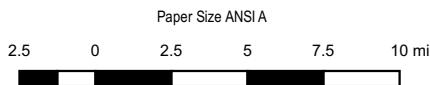
Residential baseline VMT per Capita = 26.63  
 Threshold of 15% below baseline = 22.63

**Legend**

- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County

**Residential Screening**

- 15% or lower than the Unincorporated Regional Average

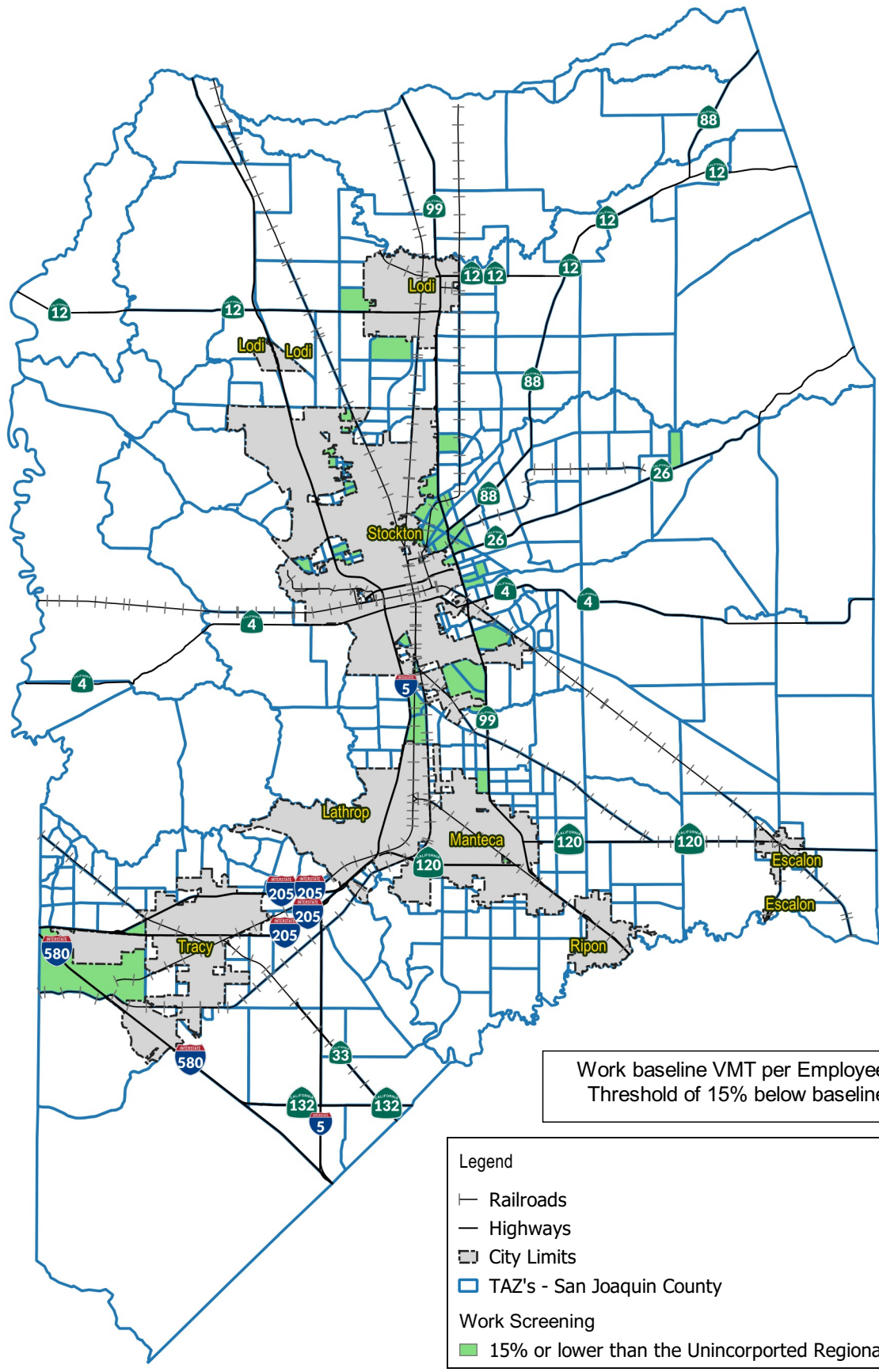


COUNTY OF SAN JOAQUIN  
 VMT THRESHOLDS STUDY

Project No. 11210023  
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**RESIDENTIAL  
 SCREENING MAP BY TAZ**

**FIGURE 3.1**



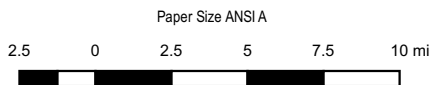
Work baseline VMT per Employee = 19.05  
 Threshold of 15% below baseline = 16.19

**Legend**

- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County

**Work Screening**

- 15% or lower than the Unincorporated Regional Average



COUNTY OF SAN JOAQUIN  
 VMT THRESHOLDS STUDY

Project No. 11210023  
 Revision No. -  
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**WORK SCREENING MAP  
 BY TAZ**

**FIGURE 3.2**



### 3.4 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 the project:

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

The County of San Joaquin is primarily served by multiple regional transit routes through the Regional Transit Authority and South County Transit. While there are intersecting transit routes, they are not providing 15 minute service intervals. GHD recommends establishing this screening criteria although no 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 County establish the following transit screening policy, per OPR guidance.

*“Projects that are within ½ mile of a transit stop at the intersection of two transit routes with 15 minute or less headways, or projects that are within ½ mile of an existing stop along a high quality transit corridor, 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 County’s zoning code, or*
- c. Is inconsistent with the region’s Sustainable Communities Strategy, County Zoning Code, or County 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.”*

### 3.5 Affordable Residential 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. Lead agencies may develop their own presumption of less than significant impact for residential projects (or residential portions of mixed use projects) containing a particular amount of affordable housing, based on local circumstances



and evidence. Furthermore, a project which includes any affordable residential units may factor the effect of the affordability on VMT into the assessment of VMT generated by those units.

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

Therefore, GHD recommends deferring adoption of a low-income housing screening threshold until a study can verify that low-income housing within the County of San Joaquin generates 15% less trips than other housing types.

### **3.6 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 County 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 County establish the following screening policy, per OPR guidance, for locally-serving retail.

*"Retail projects less than 50,000 square feet shall be presumed to have less than significant VMT effects if they are deemed locally serving. If the County determines the market geography of a retail project is in question an analysis should be conducted to verify the project does not generate regional trips."*

### **3.7 Mixed-Use Projects**

Per CEQA, if the mixed-use project is composed entirely of any combination of the above-mentioned low-VMT project types, then the project would be considered to have a less than significant impact on transportation. VMT should be considered for each use separately, or focus on the predominant use, accounting for internal capture.

### **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 County 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. 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 County use the 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 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.

### **3.8.1 Transportation Projects That Do Not Require VMT Analysis**

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, and that do not add additional motor vehicle capacity (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)
- 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



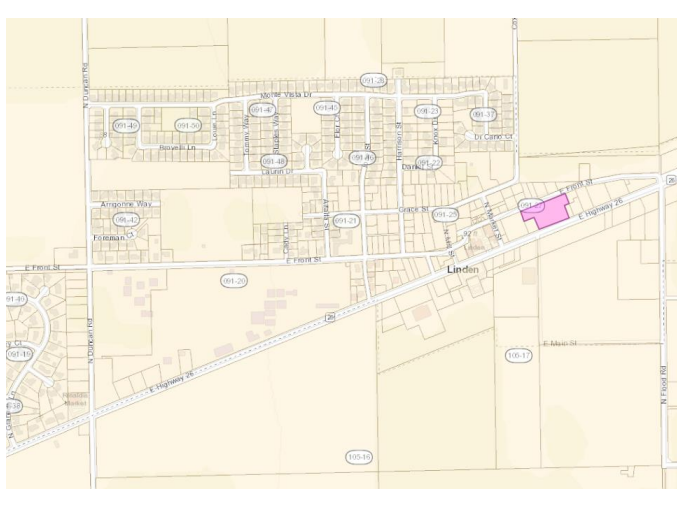
- Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit
- Conversion of existing general purpose lanes (including ramps) to managed lanes or transit lanes, or changing lane management 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




## 4. Development Project Prototype Testing

This section documents the testing of land use development project prototypes provided by the County. Recent development projects are evaluated for different land use types to assess the proposed VMT analysis methodologies, screening criteria and thresholds.

### 4.1 Retail Projects

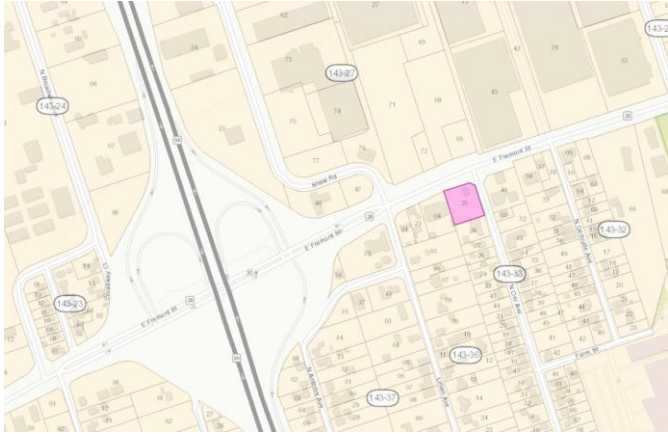
Project Details		
Project Name:	Linden Dollar General	
Location:	19259 East State Highway 26	
Land Use Type(s):	Retail	
# of Units (DU, Employees, or KSF):	9.1 KSF	
Trip Generation:	555 daily trips	
	VMТ Evaluation Criteria	
	VMТ Evaluation Metric:	Net VMТ
	VMТ Threshold Criteria:	No net increase in total VMТ.
	Screening Criteria	
	Small Project	No
	Map-Based	n/a
	Transit Proximity	No
Affordable Housing	n/a	
Locally-Serving Retail	Yes	
Conclusion		
Project meets criteria to be screened?	Yes	
Recommendation:	Project screened out. No further VMТ analysis required.	
Potentially Significant Impact?	No	



Project Details		
Project Name:	Raverty Off-Site Wine Cellar	
Location:	100 E. Taddei Road, Acampo	
Land Use Type(s):	Retail	
# of Units (DU, Employees, or KSF):	2.3 KSF	
Trip Generation:	113 peak hour trips (generated by 370-person evening event)	
	VMT Evaluation Criteria	
	VMT Evaluation Metric:	Net VMT
	VMT Threshold Criteria:	No net increase in total VMT.
	Screening Criteria	
	Small Project	No
	Map-Based	n/a
	Transit Proximity	No
Affordable Housing	n/a	
Locally-Serving Retail	No	
Conclusion		
Project meets criteria to be screened?	No	
Recommendation:	Run model	
Potentially Significant Impact?	TBD	

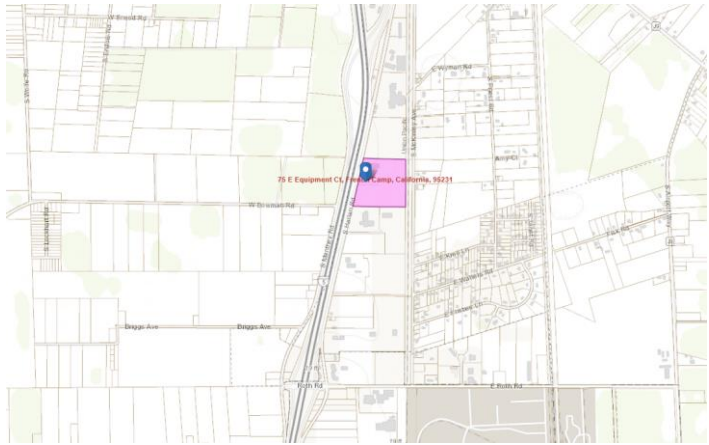




Project Details		
Project Name:	ARCO AM/PM Gas Station & Convenience Store	
Location:	4010 East Fremont Street, Stockton	
Land Use Type(s):	Retail	
# of Units (DU, Employees, or KSF):	3.5 KSF, 2 Employees per shift	
Daily Trip Generation:	Approximately 550 customers	
	VMT Evaluation Criteria	
	VMT Evaluation Metric:	Net VMT
	VMT Threshold Criteria:	No net increase in total VMT.
	Screening Criteria	
	Small Project	No
	Map-Based	n/a
	Transit Proximity	n/a
Affordable Housing	n/a	
Locally-Serving Retail	<b>Yes</b>	
Conclusion		
Project meets criteria to be screened?	<b>Yes</b>	
Recommendation:	Project screened out. No further VMT analysis required.	
Potentially Significant Impact?	No	



## 4.2 Industrial Projects

Project Details		
Project Name:	JDL Corp Truck Facility	
Location:	75 East Equipment Street, French Camp	
Land Use Type(s):	Industrial	
# of Units (DU, Employees, or KSF):	234 KSF	
Daily Trip Generation:	436 daily trips	
	VMT Evaluation Criteria	
	VMT Evaluation Metric:	VMT per employee
	VMT Threshold Criteria:	15% below baseline
	Screening Criteria	
	Small Project	No
	Map-Based	<b>Yes</b>
	Transit Proximity	No
	Affordable Housing	n/a
Locally-Serving Retail	No	
Conclusion		
Project meets criteria to be screened?	<b>Yes</b>	
Recommendation:	Project screened out. No further VMT analysis required.	
Potentially Significant Impact?	No	

Note: If this project were to be analyzed on a Net VMT basis, due to having a retail component and predominantly visitor-serving, then the project would be not be screened out and a model run would be required.



Project Details		
Project Name:	Sweet Corn Packing Facility	
Location:	3590 West Lehman Road, Tracy	
Land Use Type(s):	Industrial	
# of Units (DU, Employees, or KSF):	204 KSF, 219 Employees	
Trip Generation:	Approximately 191 AM, 203 PM peak hour trips	
	VMT Evaluation Criteria	
	VMT Evaluation Metric:	VMT per employee
	VMT Threshold Criteria:	15% below baseline
	Screening Criteria	
	Small Project	No
	Map-Based	No
Transit Proximity	No	
Affordable Housing	n/a	
Locally-Serving Retail	No	
Conclusion		
Project meets criteria to be screened?	No	
Recommendation:	Run model for VMT per employee.	
Potentially Significant Impact?	TBD	

Based on the Traffic Impact Study provided by the County, the predominant vehicle trips will be cars or light-duty vehicles. This specific project is also proposed as a relocation of an existing facility from another site. The study analyzed trips based on the number of employees. Therefore, VMT per employee is appropriate.



### 4.3 Mixed-Use Projects

Project Details		
Project Name:	<i>Not disclosed</i>	
Location:	14800 W. Schutte Rd, Tracy	
Land Use Type(s):	Industrial (primary), Office	
# of Units (DU, Employees, or KSF):	679 KSF	
Peak Hour Trip Generation:	TBD	
	VMT Evaluation Criteria	
	VMT Evaluation Metric:	VMT per employee
	VMT Threshold Criteria:	15% below baseline
	Screening Criteria	
	Small Project	No
	Map-Based	<b>Yes</b>
	Transit Proximity	No
Affordable Housing	n/a	
Locally-Serving Retail	No	
Conclusion		
Project meets criteria to be screened?	Yes	
Recommendation:	Project screened out. No further VMT analysis required.	
Potentially Significant Impact?	No	

Note: Office and Industrial would use the same VMT metric. VMT analysis would include the total employment.



Project Details		
Project Name:	Cannabis Business Park	
Location:	12470 East Locke Road, Lockeford	
Land Use Type(s):	Industrial (primary), Retail, Agriculture	
# of Units (DU, Employees, or KSF):	1028 KSF, Number of employees not specified	
Peak Hour Trip Generation:	TBD	
	VMT Evaluation Criteria	
	VMT Evaluation Metric:	VMT per employee
	VMT Threshold Criteria:	15% below baseline
	Screening Criteria	
	Small Project	No
	Map-Based	n/a
	Transit Proximity	No
Affordable Housing	n/a	
Locally-Serving Retail	No	
Conclusion		
Project meets criteria to be screened?	No	
Recommendation:	Run model for Project VMT per employee.	
Potentially Significant Impact?	TBD	

Note: Primary use determined not to be customer facing. Most trips are anticipated to be generated by employees.



## 4.4 Other Projects

Project Details		
Project Name:	Sikh Gurdwara	
Location:	21356 South Naglee Road, Tracy	
Land Use Type(s):	Other	
# of Units (DU, Employees, or KSF):	41.1 KSF, 10-15 Employees (25 for special events)	
Trip Generation:	Estimated 100 vehicle trips per shift on weekends	
	VMT Evaluation Criteria	
	VMT Evaluation Metric:	Net VMT
	VMT Threshold Criteria:	No net increase in total VMT.
	Screening Criteria	
	Small Project	No
	Map-Based	n/a
	Transit Proximity	No
Affordable Housing	n/a	
Locally-Serving Retail	No	
Conclusion		
Project meets criteria to be screened?	No	
Recommendation:	Run model	
Potentially Significant Impact?	TBD	

Note: Although this project would meet the screening criteria for a locally-serving project by size, recommendation would be to consult County Public Works to determine if project is locally-serving or if a detailed VMT would be required.



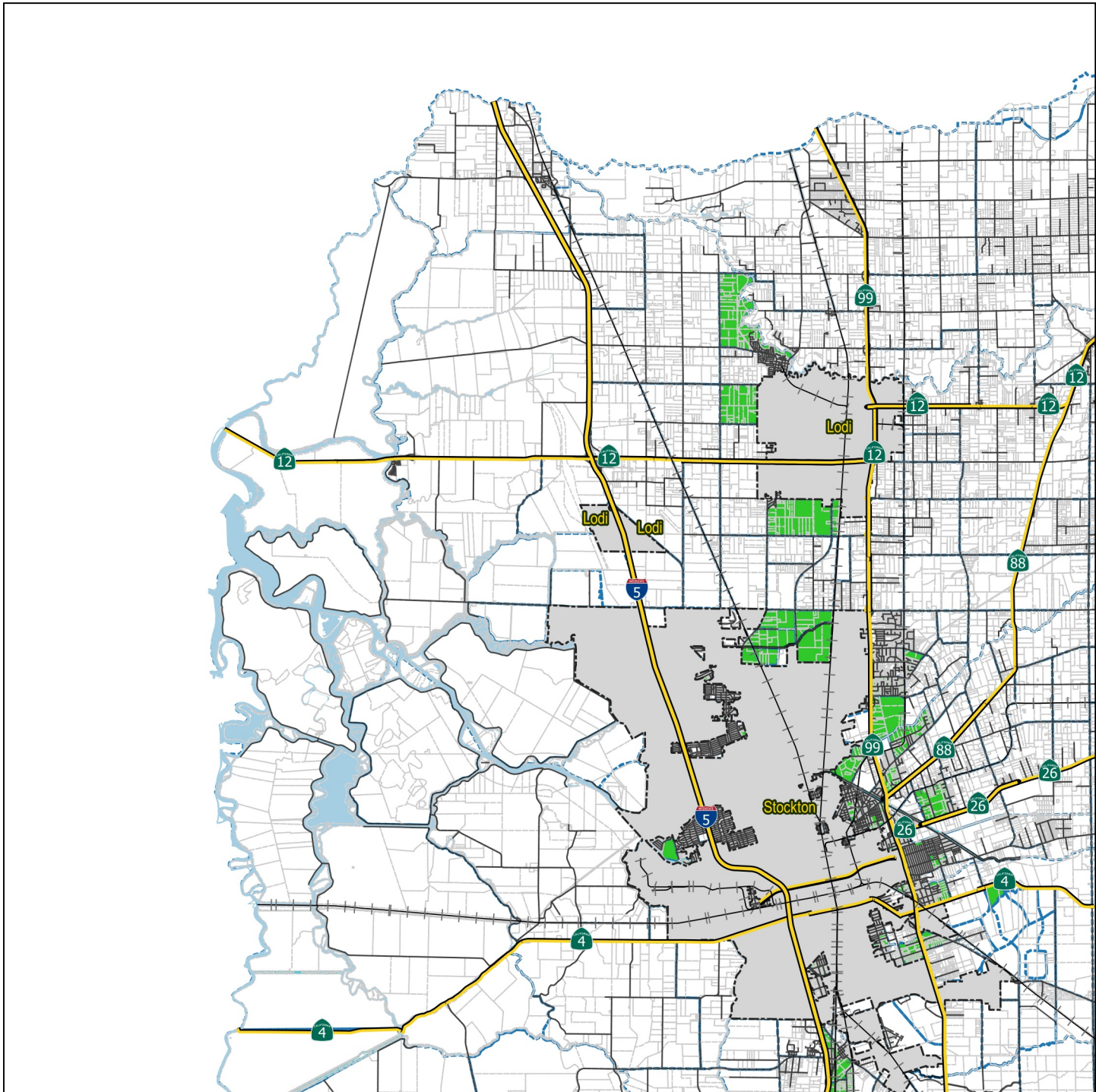
# Appendices



# Appendix A

## Screening Maps by Area



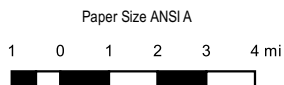


**NORTHWEST COUNTY VIEW**

Residential baseline VMT per Capita = 26.63  
 Threshold of 15% below baseline = 22.63

**Legend**

- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County
- ▭ Parcels
- Streets
- Waterways
  - ▭ Canal
  - ▭ Lake or River
- Residential Screening
  - ▭ 15% or lower than the Unincorporated Regional Average

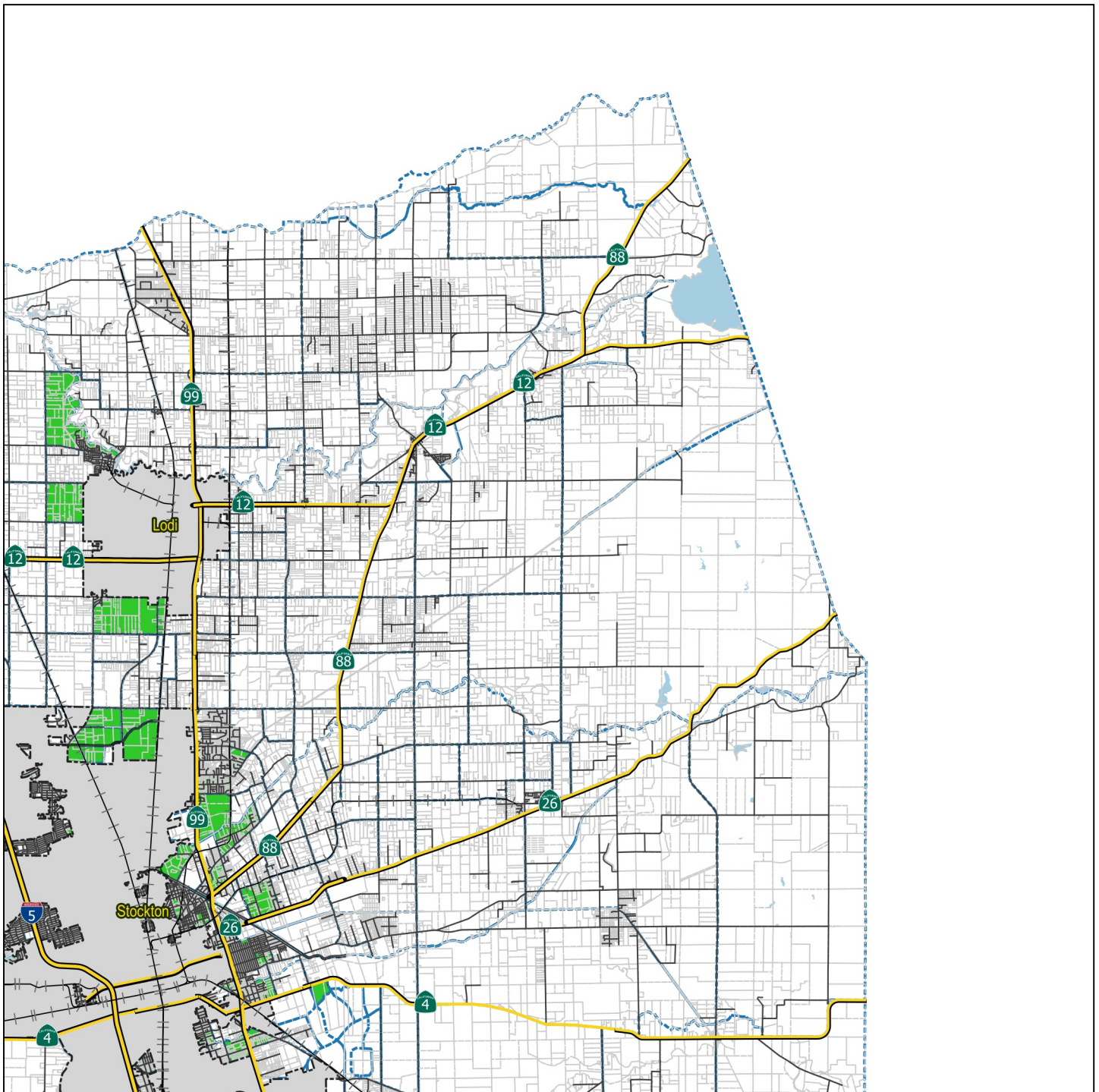


COUNTY OF SAN JOAQUIN  
 VMT THRESHOLDS STUDY

Project No. 11210023  
 Revision No. -  
 Date. Jul 02, 2020

**RESIDENTIAL  
 SCREENING MAP BY TAZ**

**FIGURE A.1**

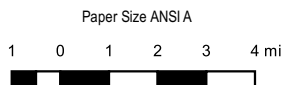


**NORTHEAST COUNTY VIEW**

Residential baseline VMT per Capita = 26.63  
 Threshold of 15% below baseline = 22.63

**Legend**

- Railroads
- Highways
- ▣ City Limits
- ▣ TAZ's - San Joaquin County
- ▣ Parcels
- Streets
- Waterways
  - ▣ Canal
  - ▣ Lake or River
- Residential Screening
  - ▣ 15% or lower than the Unincorporated Regional Average



Map Projection: Mercator Auxiliary Sphere  
 Horizontal Datum: WGS 1984  
 Grid: WGS 1984 Web Mercator Auxiliary Sphere

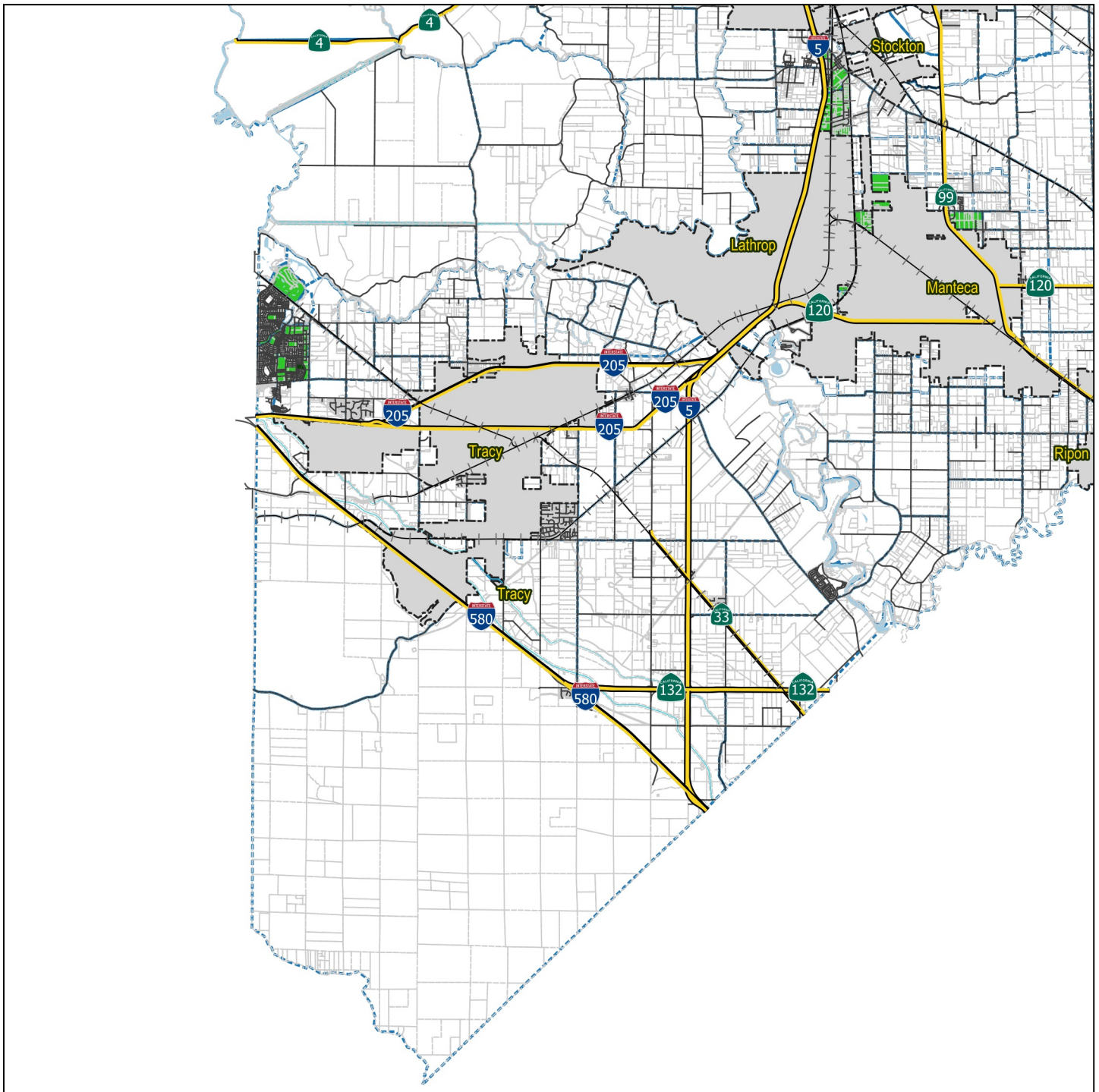


**COUNTY OF SAN JOAQUIN**  
**VMT THRESHOLDS STUDY**

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**RESIDENTIAL**  
**SCREENING MAP BY TAZ**

**FIGURE A.2**

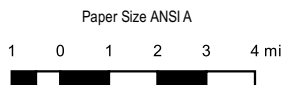


**SOUTHWEST COUNTY VIEW**

Residential baseline VMT per Capita = 26.63  
 Threshold of 15% below baseline = 22.63

**Legend**

- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County
- ▭ Parcels
- Streets
- Waterways
  - ▭ Canal
  - ▭ Lake or River
- Residential Screening
  - ▭ 15% or lower than the Unincorporated Regional Average



Paper Size ANSI A  
 Map Projection: Mercator Auxiliary Sphere  
 Horizontal Datum: WGS 1984  
 Grid: WGS 1984 Web Mercator Auxiliary Sphere

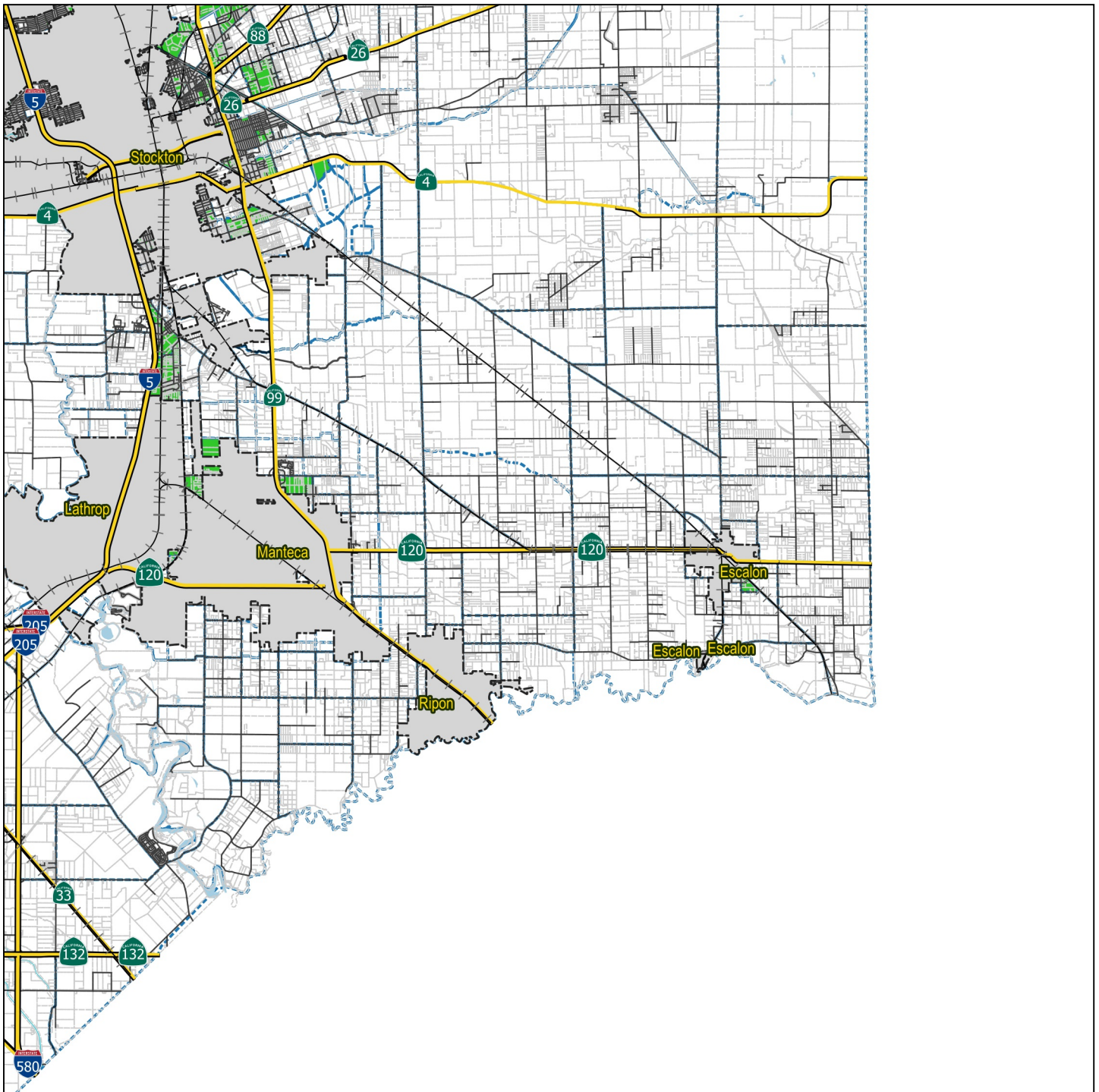


COUNTY OF SAN JOAQUIN  
 VMT THRESHOLDS STUDY

**RESIDENTIAL  
 SCREENING MAP BY TAZ**

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**FIGURE A.3**



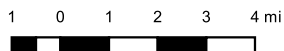
**SOUTHEAST COUNTY VIEW**

Residential baseline VMT per Capita = 26.63  
 Threshold of 15% below baseline = 22.63

**Legend**

- Railroads
- Highways
- City Limits
- TAZ's - San Joaquin County
- Parcels
- Streets
- Waterways
  - Canal
  - Lake or River
- Residential Screening
  - 15% or lower than the Unincorporated Regional Average

Paper Size ANSI A



Map Projection: Mercator Auxiliary Sphere  
 Horizontal Datum: WGS 1984  
 Grid: WGS 1984 Web Mercator Auxiliary Sphere

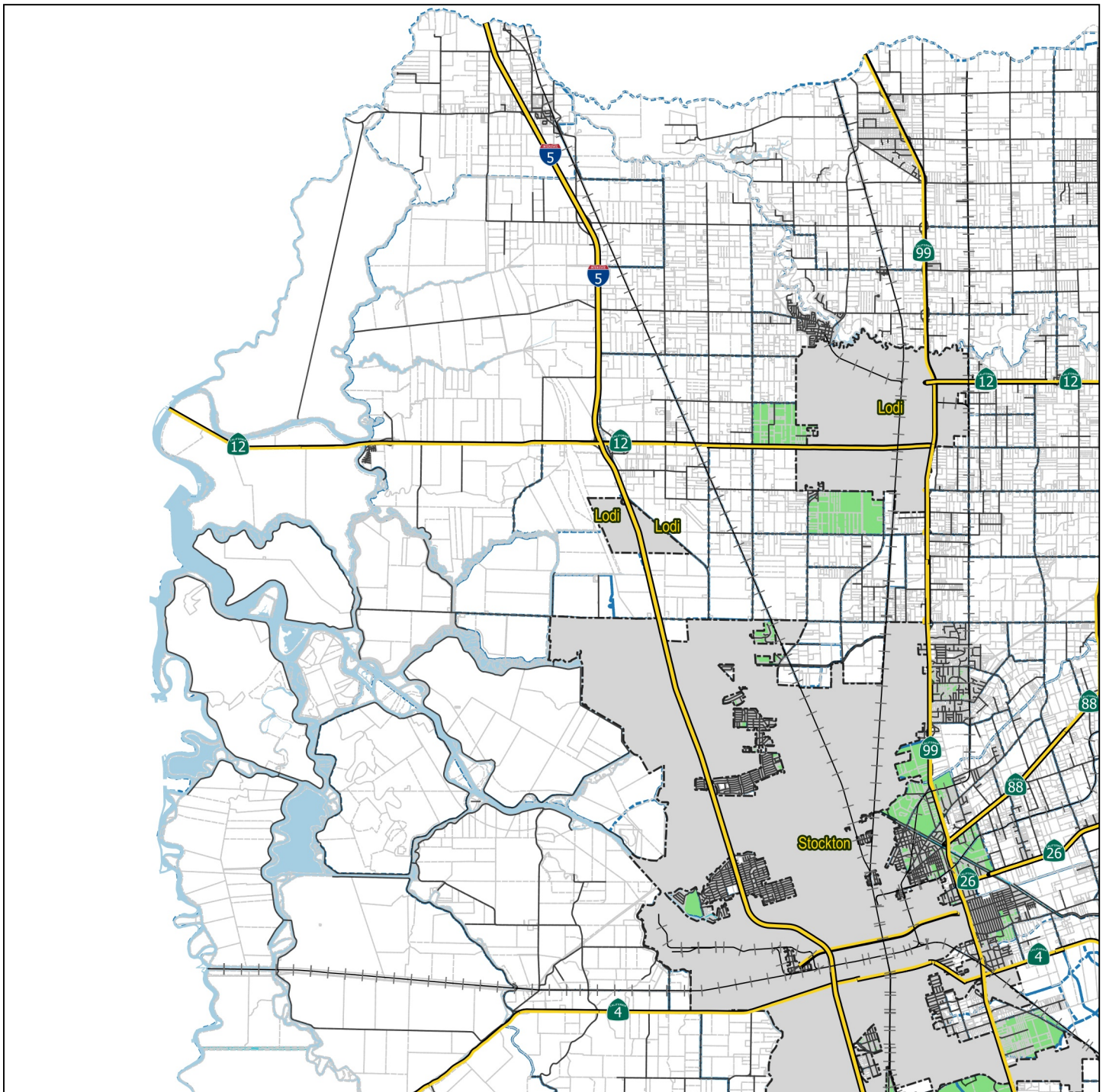


**COUNTY OF SAN JOAQUIN**  
**VMT THRESHOLDS STUDY**

Project No. 11210023  
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**RESIDENTIAL**  
**SCREENING MAP BY TAZ**

**FIGURE A.4**

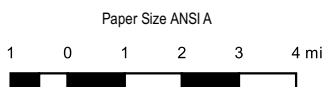


**NORTHWEST COUNTY VIEW**

Work baseline VMT per Employee = 19.05  
 Threshold of 15% below baseline = 16.19

**Legend**

- Streets
- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County
- ▭ Parcels
- Waterways
  - ▭ Canal
  - ▭ Lake or River
- Work Screening
  - ▭ 15% or lower than the Unincorporated Regional Average

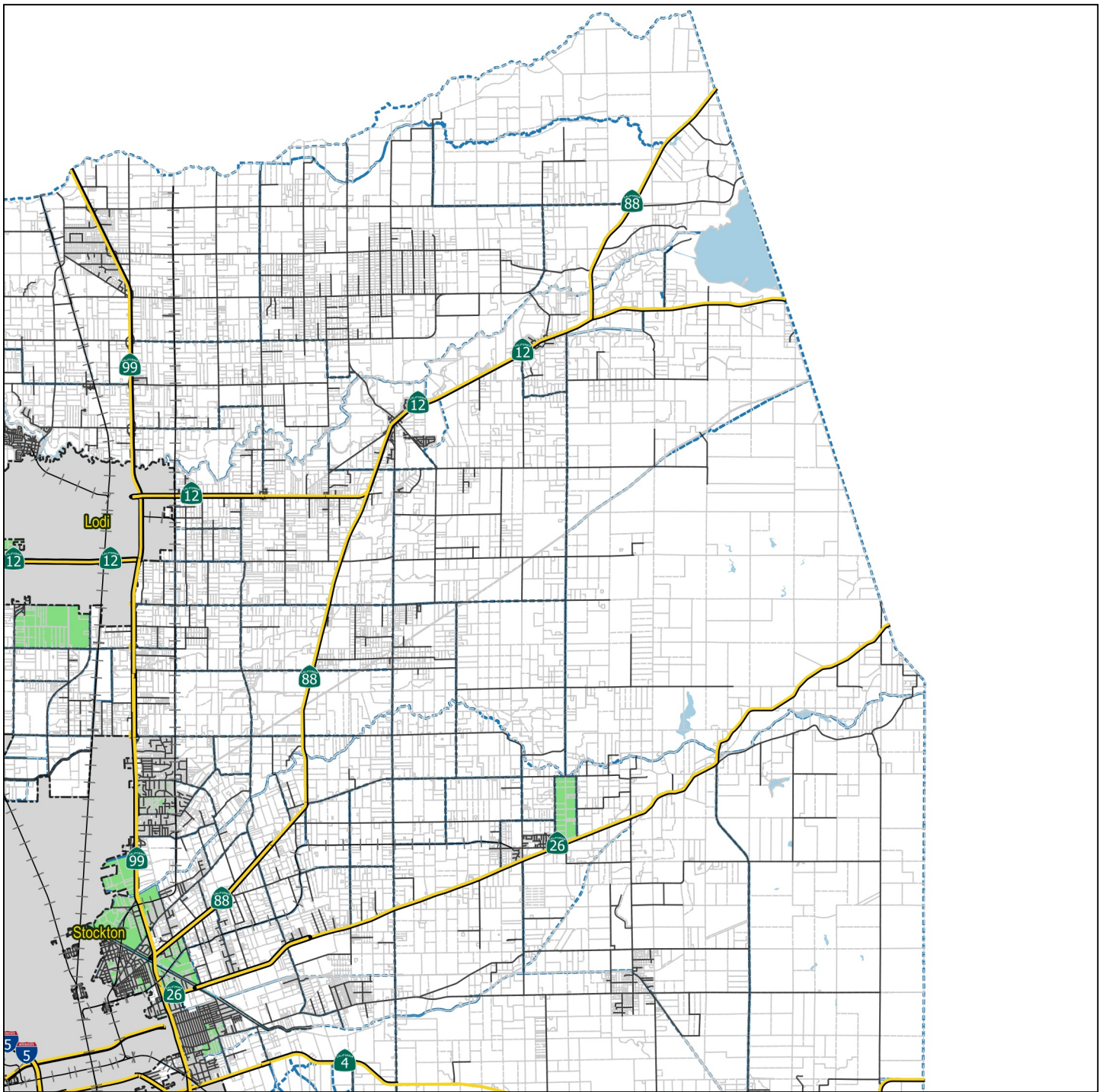


COUNTY OF SAN JOAQUIN  
 VMT THRESHOLDS STUDY

**WORK SCREENING MAP  
 BY TAZ**

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**FIGURE A.5**



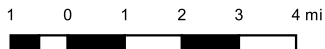
**NORTHEAST COUNTY VIEW**

Work baseline VMT per Employee = 19.05  
 Threshold of 15% below baseline = 16.19

**Legend**

- Streets
- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County
- ▭ Parcels
- Waterways
- ▭ Canal
- ▭ Lake or River
- Work Screening
- ▭ 15% or lower than the Unincorporated Regional Average

Paper Size ANSI A



Map Projection: Mercator Auxiliary Sphere  
 Horizontal Datum: WGS 1984  
 Grid: WGS 1984 Web Mercator Auxiliary Sphere

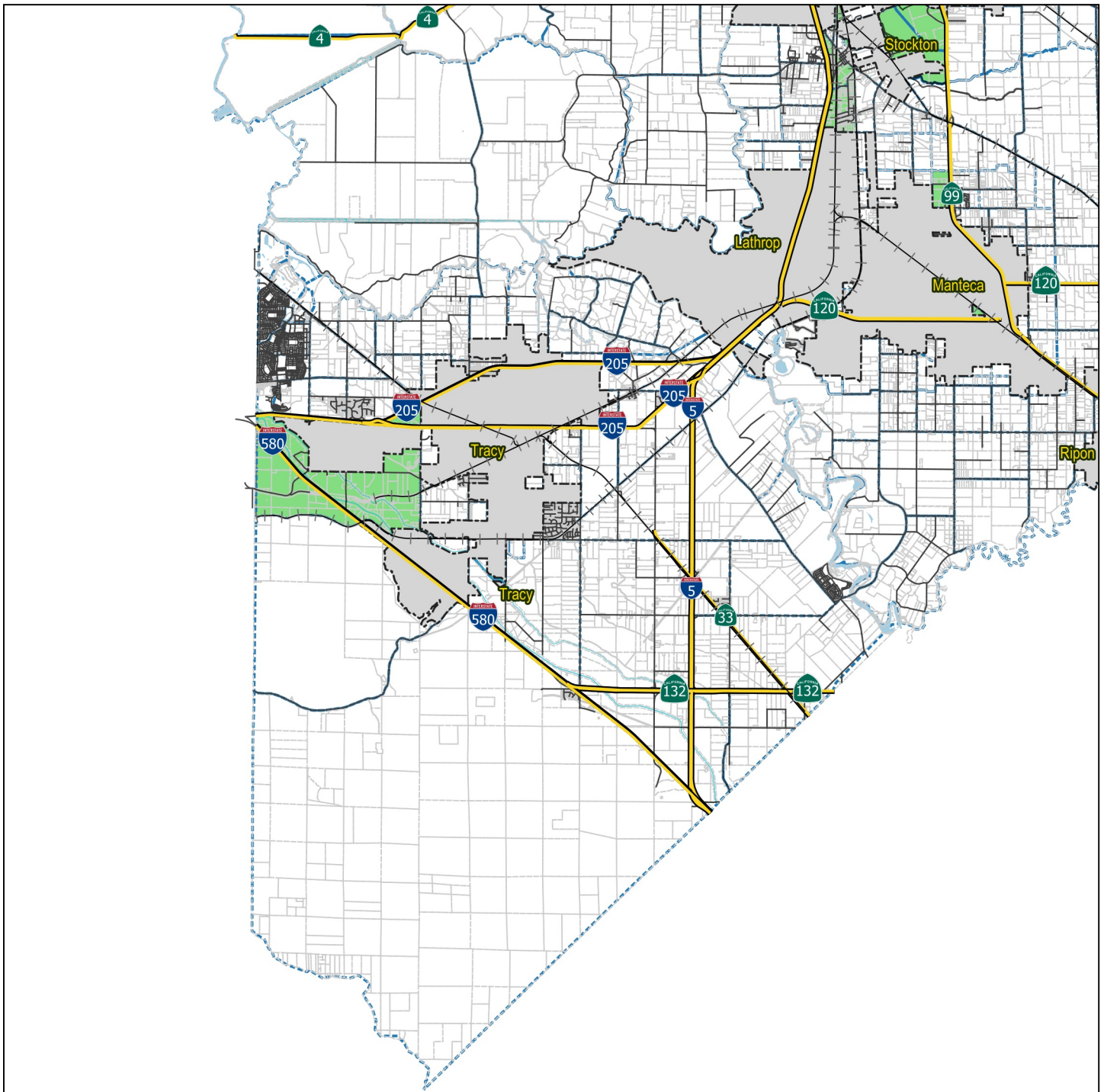


**COUNTY OF SAN JOAQUIN  
 VMT THRESHOLDS STUDY**

**WORK SCREENING MAP  
 BY TAZ**

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**FIGURE A.6**

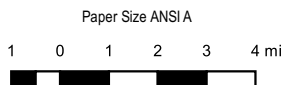


**SOUTHWEST COUNTY VIEW**

Work baseline VMT per Employee = 19.05  
 Threshold of 15% below baseline = 16.19

**Legend**

- Streets
- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County
- ▭ Parcels
- Waterways
  - ▭ Canal
  - ▭ Lake or River
- Work Screening
  - ▭ 15% or lower than the Unincorporated Regional Average

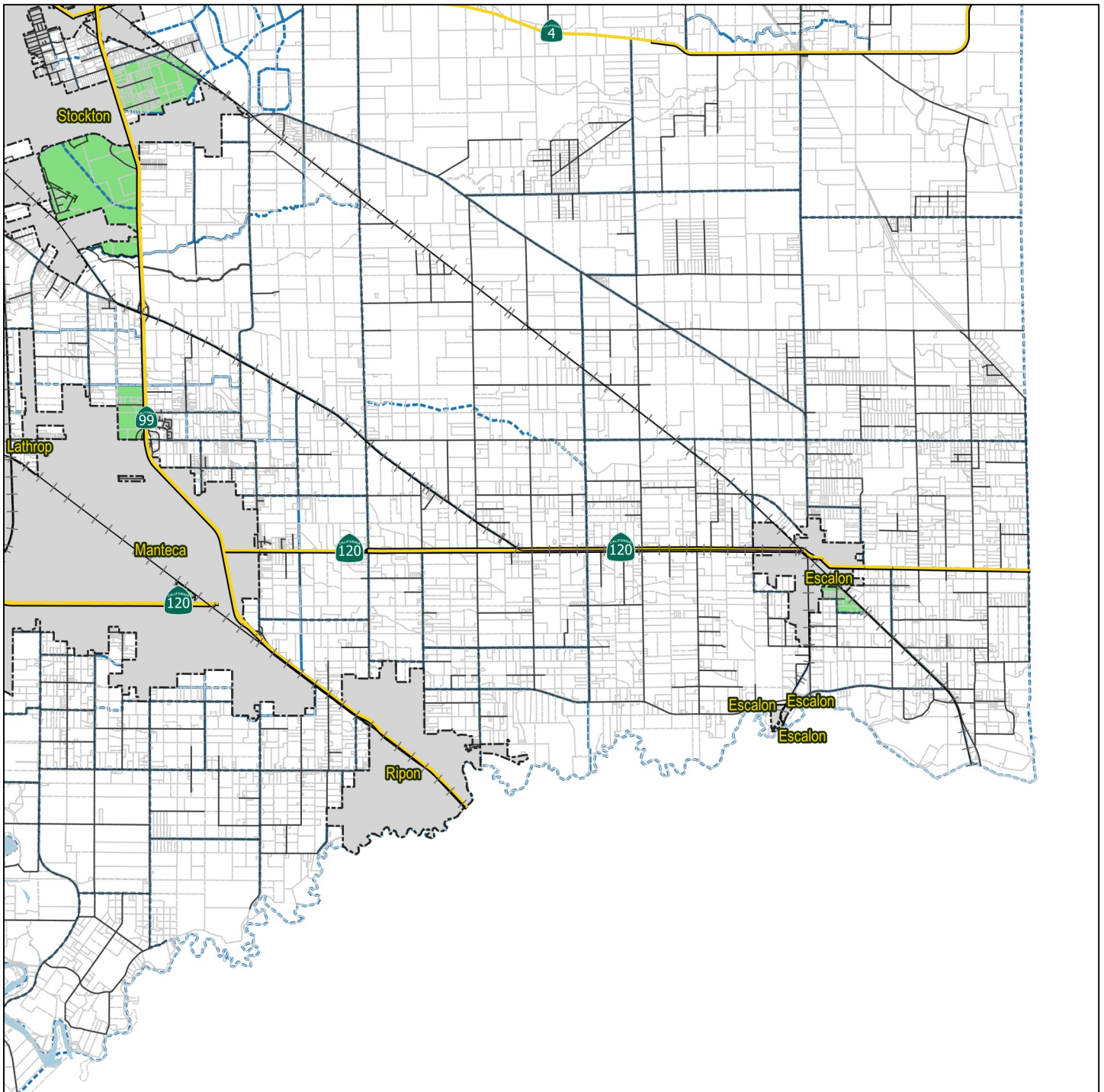


COUNTY OF SAN JOAQUIN  
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**WORK SCREENING MAP  
 BY TAZ**

**FIGURE A.7**

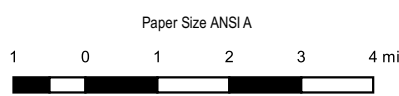


**SOUTHEAST COUNTY VIEW**

Work baseline VMT per Employee = 19.05  
 Threshold of 15% below baseline = 16.19

**Legend**

- Streets
- Railroads
- Highways
- ▭ City Limits
- ▭ TAZ's - San Joaquin County
- ▭ Parcels
- Waterways
- ▭ Lake or River
- Work Screening
- ▭ 15% or lower than the Unincorporated Regional Average



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**WORK SCREENING MAP  
 BY TAZ**

**FIGURE A.8**





## 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.

**Todd Tregenza**  
Todd.Tregenza@ghd.com  
916.782.8688

**Rosanna Southern**  
Rosanna.Southern@ghd.com  
m 916.782.8688

[www.ghd.com](http://www.ghd.com)