In-person participation by the public will be permitted.

Submit a written public comment prior to the meeting: Public comments submitted to krashad@atwater.org by 2:00 p.m. on the day of the meeting will be distributed to the General Plan Technical Advisory Committee and made part of the official minutes but will not be read out loud during the meeting.

Assistance will be provided to those requiring accommodations for disabilities in compliance with the Americans with Disabilities Act of 1990. Persons requesting accommodation should contact the City in advance of the meeting, and as soon as possible, at (209) 357-6241.

CITY OF ATWATER
GENERAL PLAN TECHNICAL ADVISORY COMMITTEE

AGENDA

Council Chambers
750 Bellevue Road
Atwater, CA 95301

March 1st, 2023

CALL TO ORDER: **6:00 PM**

PLEDGE OF ALLEGIANCE TO THE FLAG:

INVOCATION:

Invocation by Police Chaplin McClellan

ROLL CALL:

Borgwardt _____, Daugherty_____, Nelson_____, Murphy_____, Raymond_____, Reed_____,

SUBSEQUENT NEED ITEMS: (The General Plan Technical Advisory Committee Secretary shall announce any requests for items requiring immediate action subsequent to the posting of the agenda. Subsequent need items require a two-thirds vote of the members of the Commission present at the meeting.)

APPROVAL OF AGENDA AS POSTED OR AS AMENDED: (This is the time for the Committee to remove items from the agenda or to change the order of the agenda.)

Staff's Recommendation: Motion to approve agenda as posted or as amended.

ORGANIZATION OF THE GENERAL PLAN TECHNICAL ADVISORY COMMITTEE:

1. **Nomination and Appointment of General Plan Technical Advisory Committee Chairperson**

   Staff's Recommendation: That the General Plan Technical Advisory Committee, after opening and closing the nomination period by roll call vote of nominees in motion to appoint one (1) candidate serve as Chairperson, the term of one (1) year, ending on December 31, 2023.

2. **Nomination and Appointment of General Plan Technical Advisory Committee Vice Chairperson**

   Staff's Recommendation: That the General Plan Technical Advisory Committee, after opening and closing the nomination period by roll call vote of nominees in motion to appoint one (1) candidate serve as Vice Chairperson, the term of one (1) year, ending on December 31, 2023.

APPROVAL OF MINUTES:

1. **February 1st, 2023 – Regular Meeting**

OVERVIEW OF GENERAL PLAN UPDATE:

1. **General Overview: Circulation**
   a. **Goals/Policies**
   b. **Century old Improvements**
   c. **Multi-modal Transportation Needs**
2. **Planning the needs for a "New Atwater"**
3. **VMT (SB 743)**
4. **RTP/SCS**
5. **RFP GP Update**

COMMENTS FROM THE PUBLIC

NOTICE TO THE PUBLIC

At this time any person may comment on any item which is not on the agenda. You may state your name and address for the record; however, it is not required. Action will not be taken on an item that is not on the agenda. If it requires action, it will be referred to staff and/or placed on a future agenda. Please limit comments to a maximum of three (3) minutes.

ADJOURNMENT:

CERTIFICATION:

I, Kayla Rashad, Recording Secretary, do hereby certify that a copy of the foregoing Agenda was posted at City Hall a minimum of 72 hours prior to the meeting.

Kayla Rashad

Kayla Rashad,
Recording Secretary

SB 343 NOTICE

In accordance with California Government Code Section 54957.5, any writing or document that is a public record, relates to an open session agenda item and is distributed less than 72 hours prior to a regular meeting will be made available for public inspection in the Community Development Department during normal business hours at 750 Bellevue Road.

If, however, the document or writing is not distributed until the regular meeting to which it relates, then the document or writing will be made available to the public at the location of the meeting, as listed on this agenda at 750 Bellevue Road.

In compliance with the federal Americans with Disabilities Act of 1990, upon request, the agenda can be provided in an alternative format to accommodate special needs. If you require special accommodations to participate in a City Council, Commission or Committee meeting due to a disability, please contact the Acting Secretary a minimum of three (3) business days in advance of the meeting at (209)-812-1031. You may also send the request by email to krashad@atwater.org.

CITY OF ATWATER

GENERAL PLAN TECHNICAL ADVISORY COMMITTEE

ACTION MINUTES

February 1, 2023

REGULAR SESSION: (Council Chambers)

The General Plan Technical Advisory Committee of the City of Atwater met in Regular Session this date at 6:02 PM in the City Council Chambers located at the Atwater Civic Center, 750 Bellevue Road, Atwater, California; Committee Member Nelson presiding.

PLEDGE OF ALLEGIANCE:

The Pledge of Allegiance was led by Committee Member Raymond.

ROLL CALL:

Present:	***Committee Members Daugherty, Murphy, Nelson, Raymond, Reed***
Absent:	***None***
Staff Present:	***Battalion Chief Lopes, Battalion Chief Ayuso, Community Development Director Thompson, Senior Planner Rashe, Recording Secretary Rashad***

SUBSEQUENT NEED ITEMS: ***None***

APPROVAL OF AGENDA AS POSTED OR AS AMENDED:

MOTION: ***Committee Member Murphy moved to approve the agenda as posted. The motion was seconded by Committee Member Daugherty and the vote was: Ayes: Daugherty, Nelson, Murphy, Raymond, Reed; Noes: None; Absent: None. The motion passed.***

OVERVIEW OF GENERAL PLAN UPDATE:

Cortese-Knox-Hertzberg Act

LAFCo Representative Bill Nicholson presented a PowerPoint on this item.

LAFCo Representative

LAFCo Representative Bill Nicholson presented a PowerPoint on this item.

Request for Proposals – General Plan Update and Master EIR

Community Development Director Thompson provided a verbal update on the General Plan Update and Master EIR which would be released the second week of February.

COMMENTS FROM THE PUBLIC:

Committee Member Nelson opened Public Comment.

Notice to the public was read.

City Resident, Sam spoke regarding Affordable Housing Act.

No one else came forward to speak.

Committee Member Nelson closed the Public Comment.

ADJOURNMENT:

Committee Member Nelson adjourned the meeting at 7:11 PM.

_____

Mike Nelson, Committee Member

By: Kayla Rashad,
Recording Secretary

VMT THRESHOLDS AND IMPLEMENTATION GUIDELINES

MCAG | MERCED COUNTY ASSOCIATION OF GOVERNMENTS

LSA

November 2022

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VMT THRESHOLDS AND IMPLEMENTATION GUIDELINES

Prepared for:

Merced County Association of Governments
369 West 18th Street
Merced, California 95340

Prepared by:

LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
(951) 781-9310

Project No. MCN2201

November 2022

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EXECUTIVE SUMMARY

Senate Bill (SB) 743, which became effective July 1, 2020, changes the way transportation impacts are determined in California Environmental Quality Act (CEQA) documents. SB 743 replaces the metric for determining transportation impacts using motor vehicle delay and Level of Service (LOS) to Vehicle Miles Traveled (VMT) in CEQA traffic impact studies. As a result of the SB 743 final rulemaking and the implementation deadline of July 1, 2020, the Merced County Association of Governments (MCAG) has prepared this document as a regional guide for the seven member jurisdictions - Merced County and the cities of Atwater, Dos Palos, Gustine, Livingston, Los Banos, and Merced. The member jurisdictions can adopt the recommendations in the regional guidelines as appropriate based on their individual circumstances, such as growth policies and economic development goals.

This document provides a detailed discussion on implementing the CEQA VMT metric as applicable to the MCAG member jurisdictions. Substantial evidence and explanation on establishing the "Region," VMT screening criteria, and VMT analysis thresholds are also described. The following topics establish the steps for preparation of VMT analysis. Each topic is discussed in more detail further in this report.

- **Definition of 'Region':** Merced County is recommended as the region for VMT analysis purposes.
- **Standardized Screening Methods:** Projects within a Transit Priority Area that meet additional requirements, local-serving retail projects up to 50,000 square feet (sf), residential, office, industrial, or mixed-use projects within low-VMT generating areas, projects with 100 percent affordable housing units, and projects that are consistent with the jurisdiction's General Plan and generate fewer than 1,000 daily trips may be screened out from the need for a VMT analysis. Additionally, projects that are not consistent with the jurisdiction's General Plan but generate fewer than 500 daily trips may also be screened out from a VMT analysis.
- **Appropriate VMT Significance Thresholds for Development Projects, Transportation Projects, and Community/General Plans:** For all projects (except retail), a significance threshold of 86 percent of the existing regional average of the respective VMT metric is recommended. For retail projects, a significance threshold of no net increase in VMT is recommended. For mixed use projects, the VMT thresholds are based on the respective thresholds for the various land use components. For transportation projects, net increase in induced VMT is recommended as the significance threshold. Finally, for land use plans, the existing regional average VMT per capita, VMT per employee, and/or VMT per service population is recommended as the threshold of significance.
- **Feasible Mitigation Strategies:** A list of VMT mitigation measures applicable to development projects, transportation projects, and plans in the context of the MCAG member jurisdictions is provided for projects which may not meet the recommended significance thresholds. Additionally, implementation of a future VMT mitigation bank, VMT mitigation exchange, and/or VMT impact fee are discussed as potential future regional VMT mitigation mechanisms.

MCAG recommends the use of the MCAG Travel Demand Model (TDM) for VMT analysis purposes. The MCAG TDM is the regional travel demand model applicable to jurisdictions within Merced County for evaluating project VMT. The appropriate use of the MCAG TDM for VMT calculations is further elaborated in subsequent chapters of this document.

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FIGURES AND TABLES

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ABBREVIATIONS AND ACRONYMS

ADT	Average Daily Trips
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CO_2e	Carbon Dioxide Equivalent
EIR	Environmental Impact Report
EO	Executive Order
GHG	Greenhouse Gas
GWP	Global Warming Potential
HOT	High-Occupancy Toll
HOV	High-Occupancy Vehicle
HQTA	High-Quality Transit Area
ITE	Institute of Transportation Engineers
LOS	Level of Service
MCAG	Merced County Association of Governments
MPO	Metropolitan Planning Organization
MT	Metric Ton
NCST	National Center for Sustainable Transportation
OPR	Governor's Office of Planning and Research
PRC	Public Resources Code
RTP	Regional Transportation Plan
SB	Senate Bill
SCS	Sustainable Communities Strategy
sf	Square foot/Feet
SOC	Statement of Overriding Considerations
TA	Technical Advisory
TDM	Travel Demand Model
TPA	Transit Priority Area
VMT	Vehicle Miles Traveled

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1.0 INTRODUCTION

Senate Bill (SB) 743, which became effective July 1, 2020, changes the way transportation impact assessments are conducted in California Environmental Quality Act (CEQA) documents. Most notably, rulemaking in support of SB 743 replaces motor vehicle delay, as measured by Level of Service (LOS), with Vehicle Miles Traveled (VMT) as the metric for use in CEQA transportation impact assessments.

In January 2019, the Natural Resources Agency and the Governor's Office of Planning and Research (OPR) codified SB 743 into the Public Resources Code (PRC) and the *State CEQA Guidelines.*

OPR published a Technical Advisory (TA) in December of 2018, as a resource to guide the assessment of the VMT metric, establish thresholds of significance, and recommends mitigation measures. The laws and rules governing the CEQA process are contained in the CEQA statute (PRC Section 21000 and following), the *State CEQA Guidelines* (California Code of Regulations, Title 14, Section 15000 and following), published court decisions interpreting CEQA, and locally adopted CEQA procedures. The TA is intended as a reference document; it does not have the weight of law. However, any decision to deviate from the TA recommendations should be supported by substantial evidence.

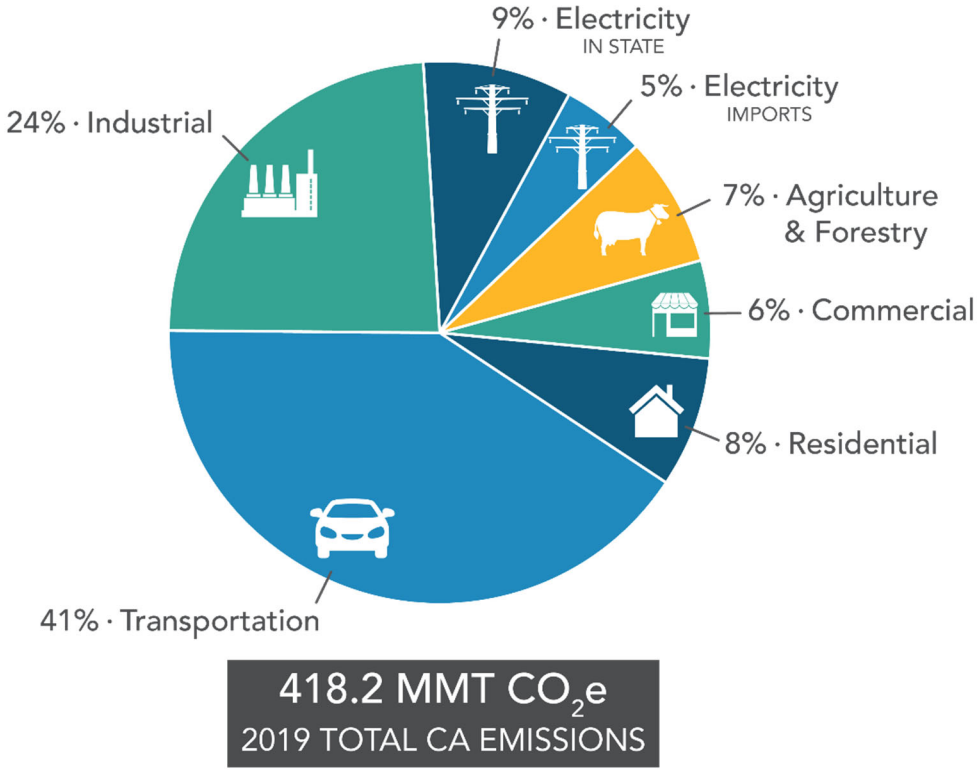
The State of California is committed to reducing greenhouse gas (GHG) emissions and achieving long-term climate change goals. As a means for achieving statewide sustainability and climate goals, California legislation is focused on reducing VMT to achieve statewide climate goals. Over the last 40 years, across the state, VMT has far exceeded that of the state's population increase during the same period. Transportation is the single largest sector contributing to California's GHG emissions. Approximately 41 percent of statewide GHG emissions are generated by the transportation sector, primarily passenger cars and light-duty trucks (see Figure 1, following page). State mandates pertaining to GHG emissions include reducing the number of single-occupancy vehicle trips and the length of vehicle trips.

This document provides a guide and substantial evidence for Merced County Association of Governments (MCAG) and its member jurisdictions in setting the thresholds of significance for CEQA transportation studies. The report is organized into the following seven chapters:

- **Chapter 1 – Introduction:** This chapter establishes the purpose and objective of this report.
- **Chapter 2 – Definition of Region:** This chapter describes the comparative geographic baseline of a region for analysis purposes.
- **Chapter 3 –Screening Criteria:** OPR acknowledges that certain projects are either low VMT generators, or, by virtue of their location, would have a less than significant impact. This chapter provides the recommended screening criteria to identify potentially exempt projects.
- **Chapter 4 –VMT Threshold Analysis for Development Projects:** This chapter identifies the VMT thresholds of significance, which would result in a significant CEQA impact. The actual VMT metric (either an efficiency rate or total VMT) is described. The process of VMT analysis is also described in this chapter.
- **Chapter 5 – VMT Threshold Analysis for Transportation Projects:** This chapter describes the methodology used to evaluate significant CEQA impacts associated with transportation projects.

Many non-capacity capital projects may be presumed to have a less than significant impact. Capacity-enhancing transportation projects may produce significant VMT impacts and would therefore be subject to a comprehensive VMT analysis including an induced travel assessment.

- **Chapter 6 – VMT Threshold Analysis for Land Use Plans:** This chapter provides guidance and substantial evidence to support the threshold recommendation for land use plans and CEQA transportation analyses by MCAG member jurisdictions.
- **Chapter 7 – VMT Mitigation Strategies:** The discussion provided in this chapter is intended as a reference and guide for use in the identification of feasible VMT mitigation options that may be used to offset project-related VMT impacts. It should be noted that this discussion is not intended to represent a full list of VMT mitigation measures available or feasible to the MCAG member jurisdictions. As in previous CEQA practice, it is generally the lead agency who identifies mitigation measures to offset the specific project-related impacts identified in an environmental document.



Source: https://ww2.arb.ca.gov/ghg-inventory-data

Figure 1: 2019 GHG Emissions in California by Economic Sector

2.0 DEFINITION OF REGION: VEHICLE MILES TRAVELED CONTEXT

To quantify a project's impact related to the VMT metric, a geographic context must be established. In the motor vehicle delay-based (LOS) analyses, a project study area is the geographic context for measuring a project's traffic impacts. A project study area is generally determined by the incremental increase in traffic generated by the project and the project's potential to create travel delays in the area. This generally includes intersections and roadway segments where the project would add a prescribed number of peak-hour trips. Lead agencies typically limit the LOS-based project study area boundaries within their jurisdictions.

Unlike delay-based LOS analyses, VMT produces a regional impact that is not defined by roadway, intersection, or jurisdictional boundaries. OPR acknowledges this in its TA (page 6), which states:

> *"Lead agencies should not truncate any VMT analysis because of jurisdictional or other boundaries, for example, by failing to count the portion of a trip that falls outside the jurisdiction or by discounting the VMT from a trip that crosses a jurisdictional boundary."*

The majority of trips are commute and shopping trips occurring between residential, office, and retail uses. Therefore, pursuant to the OPR TA, the recommendations for VMT thresholds for the three primary land use types (residential, office, and retail) are based on a comparison to a *regional average.* OPR does not explicitly define the regional average, and instead, recommends:

1. *In cases where the region is substantially larger than the geography over which most workers would be expected to live, it might be appropriate to refer to a smaller geography, such as the county, that includes the area over which nearly all workers would be expected to live. (page 16)*
2. *For residential projects in unincorporated county areas, the local agency can compare a residential project's VMT to (1) the region's VMT per capita, or (2) the aggregate population weighted VMT per capita of all cities in the region. (page 15)*

In most of urbanized areas throughout the state, the county boundary is selected as the region for purposes of VMT analysis. The primary attribute considered is that the regional definition includes the majority of the trip origins and/or destinations within that region. The denominator of all subsequent land development VMT analyses will include the vast majority of all home-based trips as the comparative.

The geographic boundary needs to contain the majority of trips that either originate in or are destined to the jurisdiction boundary. To determine this boundary, a review of the regional travel demand model data that includes MCAG and its member jurisdictions, was evaluated.

Mobility, as related to vehicle travel, can be studied using a trip-based approach or a tour-based approach. A trip-based approach calculates VMT as individual trips to and from the project. On the other hand, a tour-based approach considers a chain of linked trips that includes the project as a trip. The State supports the trip-based approach and states "When available, tour-based assessment is ideal because it captures travel behavior more comprehensively. But where tour-based tools or data

are not available for all components of an analysis, a trip-based assessment of VMT serves as a reasonable proxy." (OPR TA page 5)

The MCAG Travel Demand Model (TDM) is the regional model for the County. This model is applicable to jurisdictions within Merced County, including the unincorporated county for evaluating project VMT. This model is also trip-based and was used to evaluate the typical 'trip catchment areas' for the MCAG member jurisdictions. Additionally, consistent with the OPR TA, only trips having origins or destinations or both within the specific jurisdiction were considered for this analysis. External pass-through trips were not considered as these are not required for the analysis.

As illustrated in Figure 2, based on the analysis using the MCAG TDM, individual MCAG member jurisdictions have a variable percentage of trips contained within themselves, but, for all the jurisdictions, approximately 95 percent or more trips are contained within Merced County. The remaining four to five percent trips travel beyond the County boundary. This data was validated by the MCAG travel demand modeling consultant and is included in Appendix A.

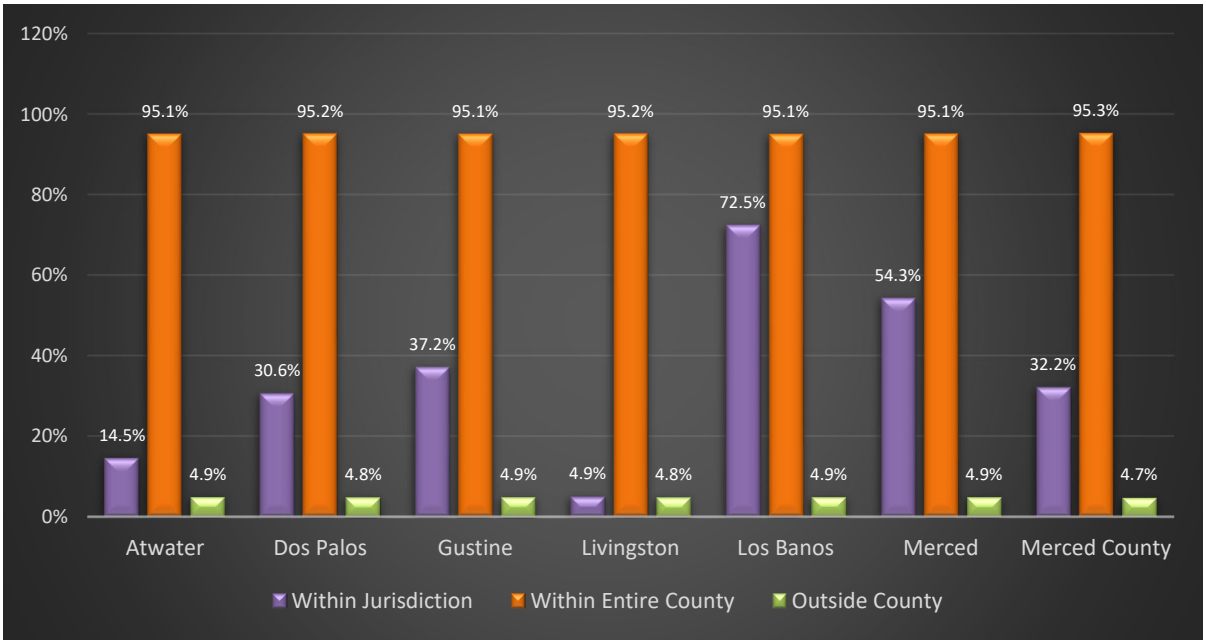


Figure 2: Share of Total Trips Having Origins/Destinations within Individual Jurisdictions, within Entire Merced County, or Outside the County (2015 MCAG TDM)

Therefore, Merced County is an appropriate 'region' for VMT analysis purposes because for all the MCAG member jurisdictions, majority of the trips (approximately 95 percent) are contained within this distinct area.

3.0 SCREENING CRITERIA

The TA acknowledges that certain activities and projects may result in a reduction of VMT and GHG emissions and may therefore be assumed to produce a less than significant transportation impact. Due to a presumption of less than significant impact as accepted by OPR, a variety of projects may be screened out of SB 743-related VMT analysis requirements.

3.1 DEVELOPMENT PROJECTS

For development projects, screening factors may include a project's size, location, proximity to transit, and trip-making potential. One or more of the following project attributes may be presumed to produce a less than significant VMT impact:

- The project is within 0.5 mile (mi) of a transit priority area or a high-quality transit area and is consistent with the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), has a floor area ratio (FAR) equal or greater than 0.75, does not provide an excessive amount of parking, or does not reduce the number of affordable residential units. In accordance with SB 743, "transit priority areas" are defined as "an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program. A Major transit stop means: "a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service of 15 minutes or less during the morning and afternoon peak commute periods." A high-quality transit area or corridor is a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

  Figure 3 depicts transit priority areas within Merced County, including high-quality transit areas (within 0.5 mile of a major transit stop) served by The Bus (Merced's Regional Transit System) with service intervals of 15 minutes or less. Projects proposed in these areas may be presumed to have a less-than-significant transportation impact unless the project is inconsistent with the RTP/SCS, has an FAR less than 0.75, provides an excessive amount of parking, or reduces the number of affordable residential units.
- The project includes local-serving retail with a combined area of less than 50,000 square feet (sf).
- Redevelopment projects that result in an equal or net reduction in VMT may be considered to have less than significant VMT impact. A net reduction in VMT would occur if the land use proposed by the project would generate less VMT than the existing land use.
- The project includes 100 percent affordable housing units.
- A project consistent with the jurisdiction's General Plan may be successfully screened if the project would generate fewer than 1,000 average daily trips (ADT), while a project not consistent with the jurisdiction's General Plan may be screened if the project would generate fewer than 500 ADT (See section 3.1.1 below.)
- Institutional/government and public service uses that support community health, safety and welfare may also be screened from subsequent CEQA VMT analysis. These facilities (e.g., police stations, fire stations, government offices, utilities, public libraries, community centers, and refuse stations) would be a part of the community and, as public services, the VMT would be

accounted for within the community. Any other similar use not included in the list can be approved on a case-by-case basis by the local jurisdiction as applicable. As such, these uses would result in reduction in total VMT due to the proximity of these services within the community. Additionally, many of these facilities would generate fewer than 1,000 ADT and/or use vehicles other than passenger-cars or light-duty trucks. These other vehicle fleets are subject to regulation outside of CEQA, such as the California Air Resources Board (CARB) and the San Joaquin Valley Air Pollution Control District.

- Local parks, daycare centers, student housing projects on or adjacent to a college campus, local-serving gas stations, banks, and K–12 public schools.
- Projects located in areas with low VMT may be screened out from further CEQA analysis. The TA acknowledges that residential and office projects located in areas having a low VMT, (which incorporate features such as density, mix of uses, transit accessibility), tend to exhibit similarly low VMT. Also, areas that are mapped as low VMT areas do not need to prepare a detailed VMT analysis. Therefore, residential, office, industrial, or mixed-use projects that are consistent with the lead agency's General Plan and located within low VMT areas (using the MCAG VMT Screening Tool[1] and applying appropriate thresholds) may be presumed to have similar low VMT profiles and could be screened out from the need for further VMT analysis. It should be noted that if a project constitutes a General Plan Amendment or Zone Change, such projects will be evaluated on a case-by-case basis. Figures 4, 5, and 6 illustrate the VMT per capita, VMT per employee, and VMT per service population screening maps for the region.
- The 2022 *State CEQA Guidelines* Section 15007 (c) states that "if a document meets the content requirements in effect when the document is sent out for public review, the document shall not need to be revised to conform to any new content requirements in Guideline amendments taking effect before the document is finally approved." Therefore, if a development/land use plan/ transportation project is already cleared by a certified Environmental Impact Report (EIR) or an adopted Negative Declaration/Mitigated Negative Declaration, then subsequent projects that are consistent with the approved project will not require a new VMT analysis.

3.1.1 Average Daily Trips (ADT) Threshold

Although OPR recommends 110 ADT as an appropriate threshold, this number is not based on any analysis of GHG reduction potential but, rather, on a CEQA categorical exemption. Under Section 15301(e)(2) of the *CEQA Guidelines*, existing facilities, including additions to existing structures of up to 10,000 sf are exempt from CEQA review if the project is located in an area where public infrastructure is available to allow for maximum planned development and the project is not located in an environmentally sensitive area.

Similar adjustments have been successfully implemented in other jurisdictions. The justification for the increase in the proposed screening threshold based on reduction of GHG emissions, is further described below.

[1] MCAG VMT Screening Tool: https://gis1.lsa.net/mcagvmt/

According to OPR, projects have a linear increase in trip generation with respect to the building footprint. Specifically, between 110 and 124 daily vehicle trips are anticipated per 10,000 sf. Based on this assumption, OPR recommends 110 ADT as the screening threshold.

The California Emissions Estimator Model (CalEEMod) is a tool provided by CARB and is accepted as the statewide standard to evaluate air quality and GHG emission impacts for CEQA assessment. As such, CalEEMod was used to characterize the effect of changes in project-related ADT to the resulting GHG emissions. To account for geographical relevance to project location, LSA calculated trip lengths from the MCAG TDM. The trip lengths were calculated for various project types and trip purposes. Table A shows the resulting annual VMT and GHG emissions produced by incremental ADT for single-family residential projects.

Table A: Representative VMT and GHG Emissions from CalEEMod

Average Daily Trips (ADT)	Annual Vehicle Miles Traveled (VMT)	Vehicular GHG Emissions (Metric Tons of CO_2e per year)	Total Project GHG Emissions (Metric Tons of CO_2e per year)
200	711,204	306.48	370.20
300	1,083,739	467.02	564.22
400	1,422,408	612.96	740.41
500	1,794,944	773.50	934.43
600	2,167,479	934.04	1,128.27
750	2,675,482	1,152.95	1,392.73
1,000	3,589,887	1,547.00	1,868.68
1,500	5,384,831	2,320.50	2,803.11

Source: CalEEMod version 2020.4.0.

CalEEMod = California Emissions Estimator Model; GHG = Greenhouse Gas; CO_2e = carbon dioxide equivalent

A common GHG emissions threshold is 3,000 metric tons (MT) of carbon dioxide equivalent[2] (CO_2e) per year. As shown in Table A, a project with an ADT lower than 1,500 would generally be expected to have a total project emission of less than 3,000 MT CO_2e/year. LSA conducted this exercise for several other land uses to identify appropriate GHG screening thresholds. Table B shows the potential maximum GHG screening thresholds (up to 3,000 MT) for these land uses.

While OPR recommends 110 ADT as the VMT screening threshold, the GHG analysis above concludes that projects with up to 1,500 ADT could be potentially screened out from VMT analysis. As a conservative approach, the MCAG *VMT Thresholds and Implementation Guidelines* document recommends a daily trip threshold of 1,000 ADT be applied to projects that are consistent with the lead agency's General Plan. However, for projects that are not consistent with the lead agency's General Plan, a screening threshold of 500 ADT may be applied. A sample list of size of projects

[2] CO_2e is a concept developed to provide one metric that includes the effects of numerous GHGs. The global warming potential (GWP) of each GHG characterizes the ability of each GHG to trap heat in the atmosphere relative to another GHG. The GWPs of all GHGs are combined to derive the CO_2e.

generating fewer than 1,000 and 500 daily vehicle trips that would be eligible to be exempt from a VMT analysis are included in Table C.

Table B: CO_2e Emission Rates by Land Use Type

Land Use	Units	Total $MTCO_2e$ per year	Annual $MTCO_2e$ per DU or TSF
Single-Family Residential	170 DU	2,996.95	17.63
Low-Rise Multifamily Residential	247 DU	2,991.46	12.11
Mid-Rise Multifamily Residential	349 DU	2,994.91	8.58
Office	240 TSF	2,992.16	12.47
Warehouse	614 TSF	2,998.41	4.88
Light Industrial	361 TSF	2,992.96	8.29
Hotel	309 Rooms	2,998.56	9.70
Medical Office	86 TSF	2,971.57	34.55
Hospital	125 Beds	2,986.23	23.89
Shopping Center	43 TSF	2,946.34	68.52
Strip Mall	83 TSF	2,999.79	36.14

Source: California Emissions Estimator Model (CalEEMod) version 2020.4.0.
DU = Dwelling Units; TSF = Thousand Square Feet; CO_2e = carbon dioxide equivalent

Table C: VMT Screening Thresholds for Sample Land Uses

Land Use	Size of Projects (Requiring a GPA)	Size of Projects (Not Requiring a GPA)
Single-Family Residential[1]	53 DU	106 DU
Low-Rise Multifamily Residential[2]	74 DU	148 DU
Mid-Rise Multifamily Residential[3]	110 DU	220 DU
Office	46.125 TSF	92.250 TSF
Warehouse	292.397 TSF	584.795 TSF
Light Industrial	102.669 TSF	205.338 TSF
Hotel	62 Rooms	125 Rooms
Medical Office[4]	13.888 TSF	27.777 TSF
Hospital	22 Beds	44 Beds

Notes: DU = Dwelling Units; TSF = Thousand Square Feet
Project sizes have been determined based on trip generation rates obtained from the ITE *Trip Generation Manual* (11th Edition).
[1] The project sizes have been provided for single-family detached residential only.
[2] The project sizes have been provided for low-rise multifamily residential (not close to rail transit) only.
[3] The project sizes have been provided for mid-rise multifamily residential (not close to rail transit) only.
[4] The project sizes have been provided for stand-alone medical office buildings only.

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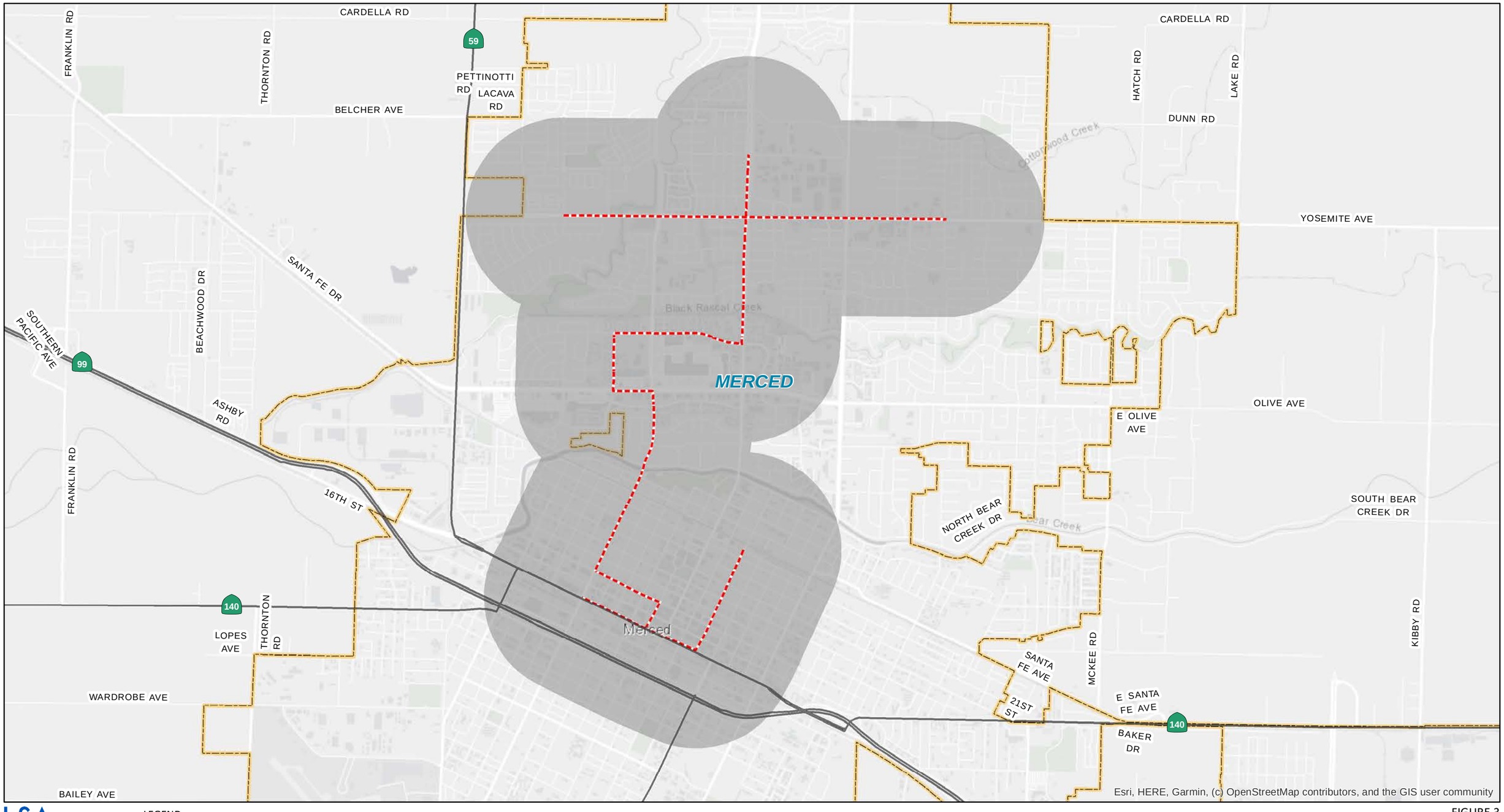

LSA

LEGEND

- City of Merced
- High Quality Transit Corridor
- High Quality Transit Area

0 1250 2500
FEET

SOURCE: MCAG

I:\MCN2201\Report\fig3_HQ_Transit.mxd (9/23/2022)

FIGURE 3

MCAG SB 743 (VMT) Implementation Plan

High-Quality Transit Area within Merced County

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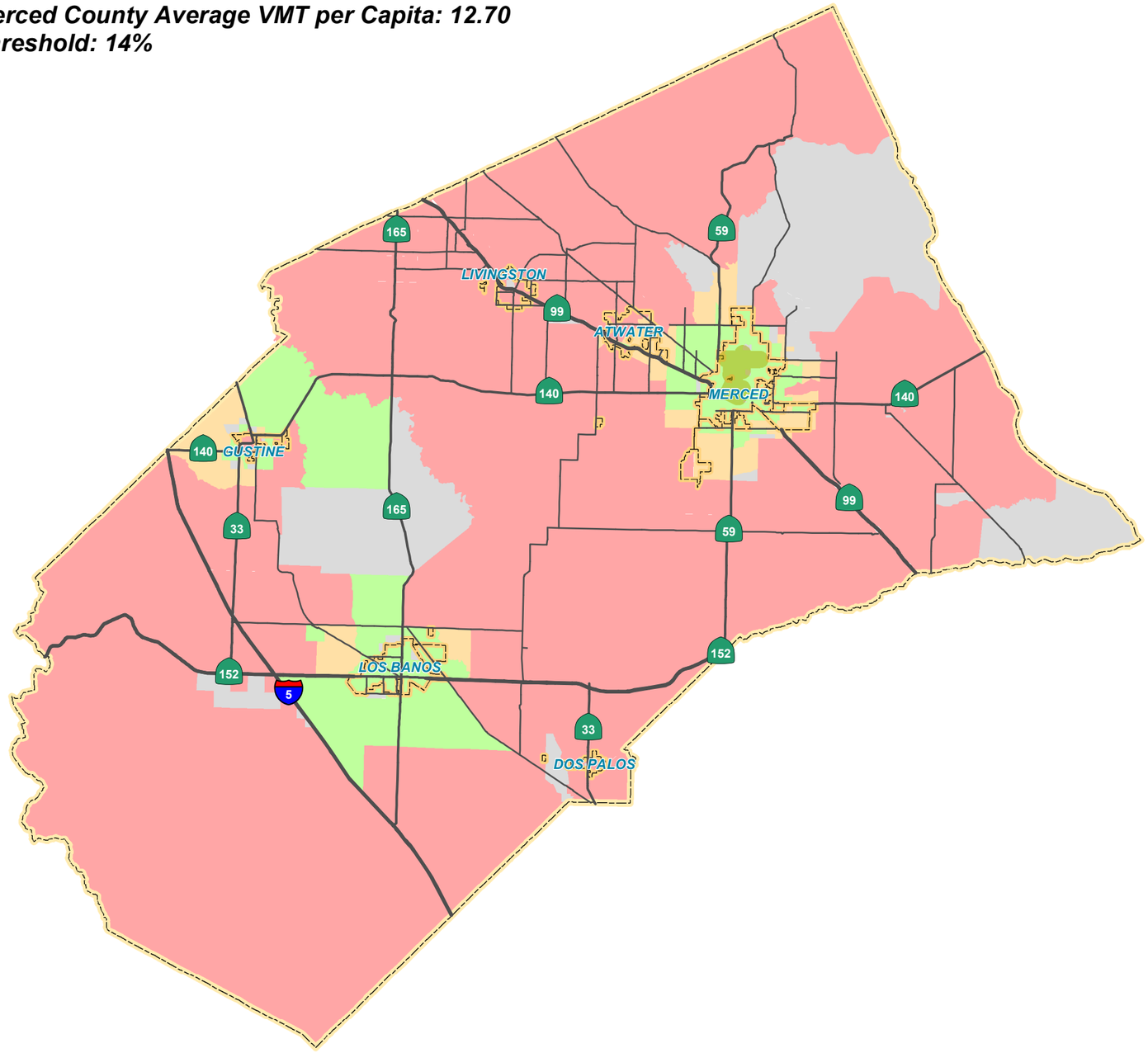
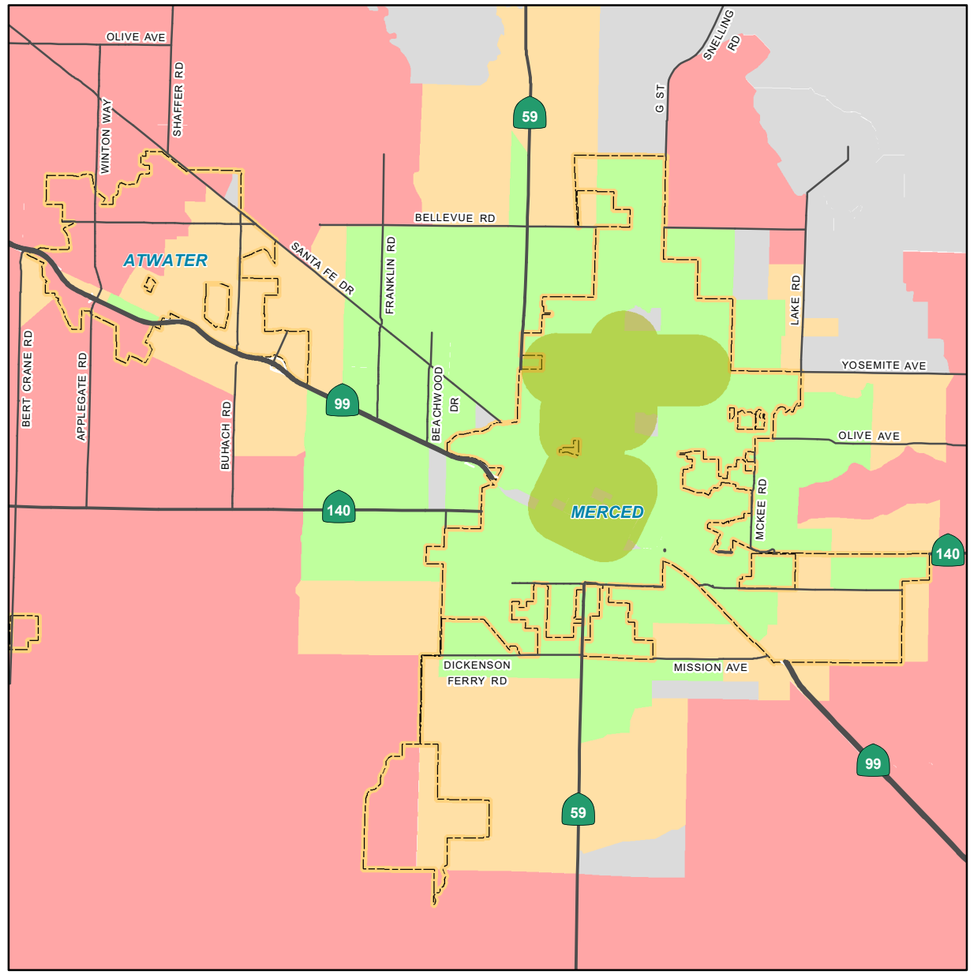
Merced County Average VMT per Capita: 12.70
Threshold: 14%





LSA

LEGEND

- County of Merced Boundary
- MCAG City Jurisdictions Boundary
- High Quality Transit Area

VMT per Capita

- No Population
- Less than 10.92
- 10.92 - 12.70
- Greater than 12.70

0 19375 38750
FEET

SOURCE: MCAG Travel Demand Model 2015 Base Year

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FIGURE 4

Merced County Association of Governments
VMT Thresholds and Implementation Guidelines

VMT per Capita Screening Map for Merced County

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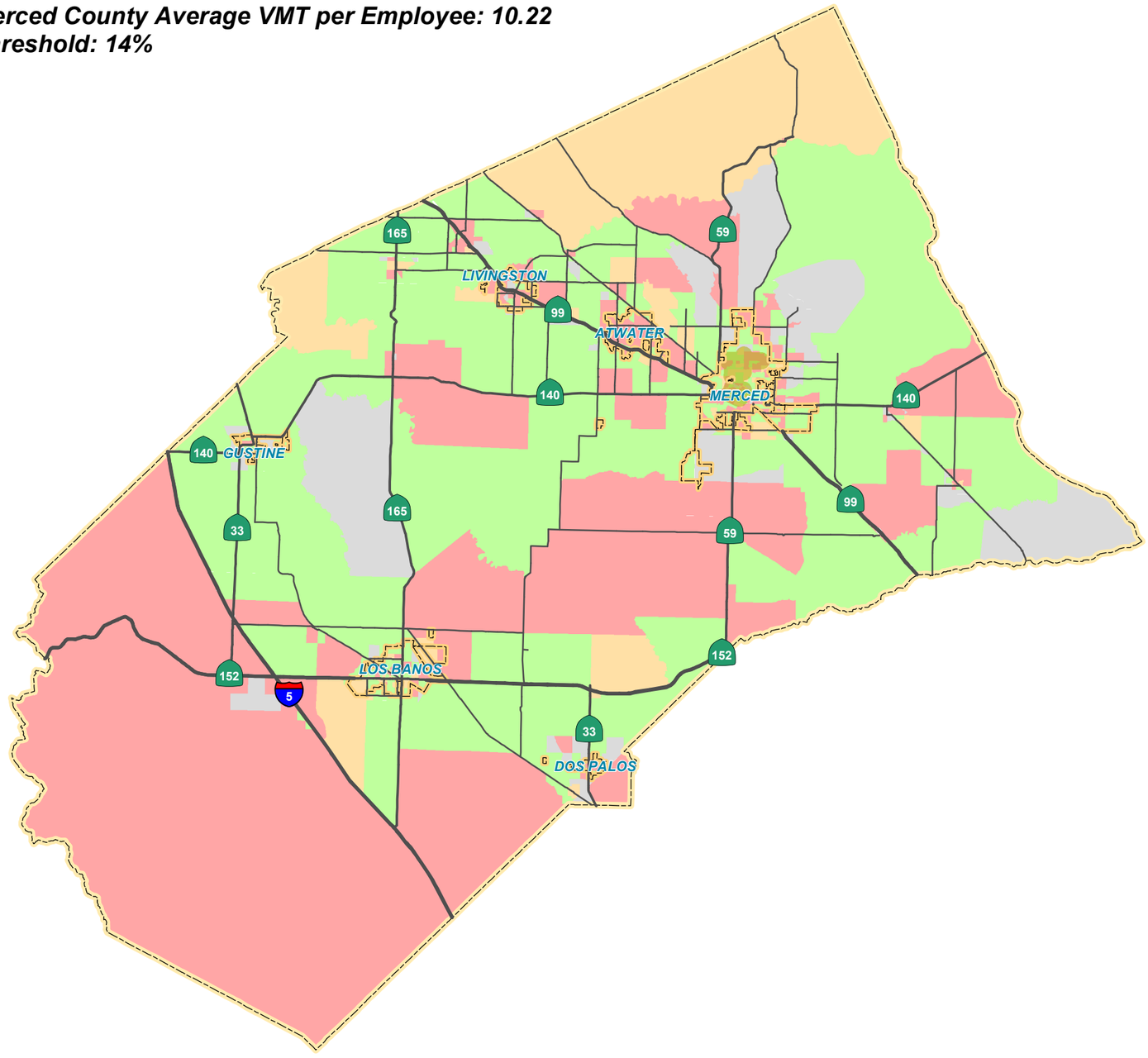
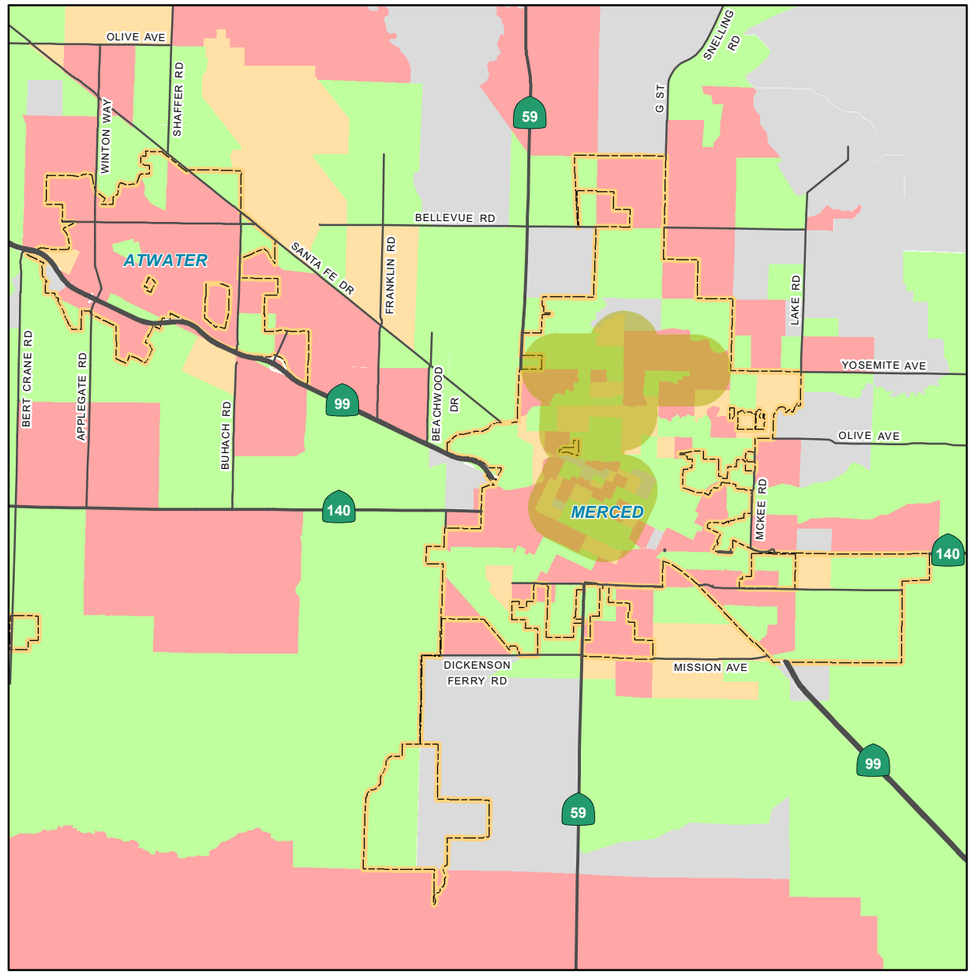
Merced County Average VMT per Employee: 10.22
Threshold: 14%





LSA

LEGEND

- County of Merced Boundary
- MCAG City Jurisdictions Boundary
- High Quality Transit Area

VMT per Employee

- No Employment
- Less than 8.79
- 8.79 - 10.22
- Greater than 10.22

0 19375 38750
FEET

SOURCE: MCAG Travel Demand Model 2015 Base Year

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FIGURE 5

Merced County Association of Governments
VMT Thresholds and Implementation Guidelines

VMT per Employee Screening Map for Merced County

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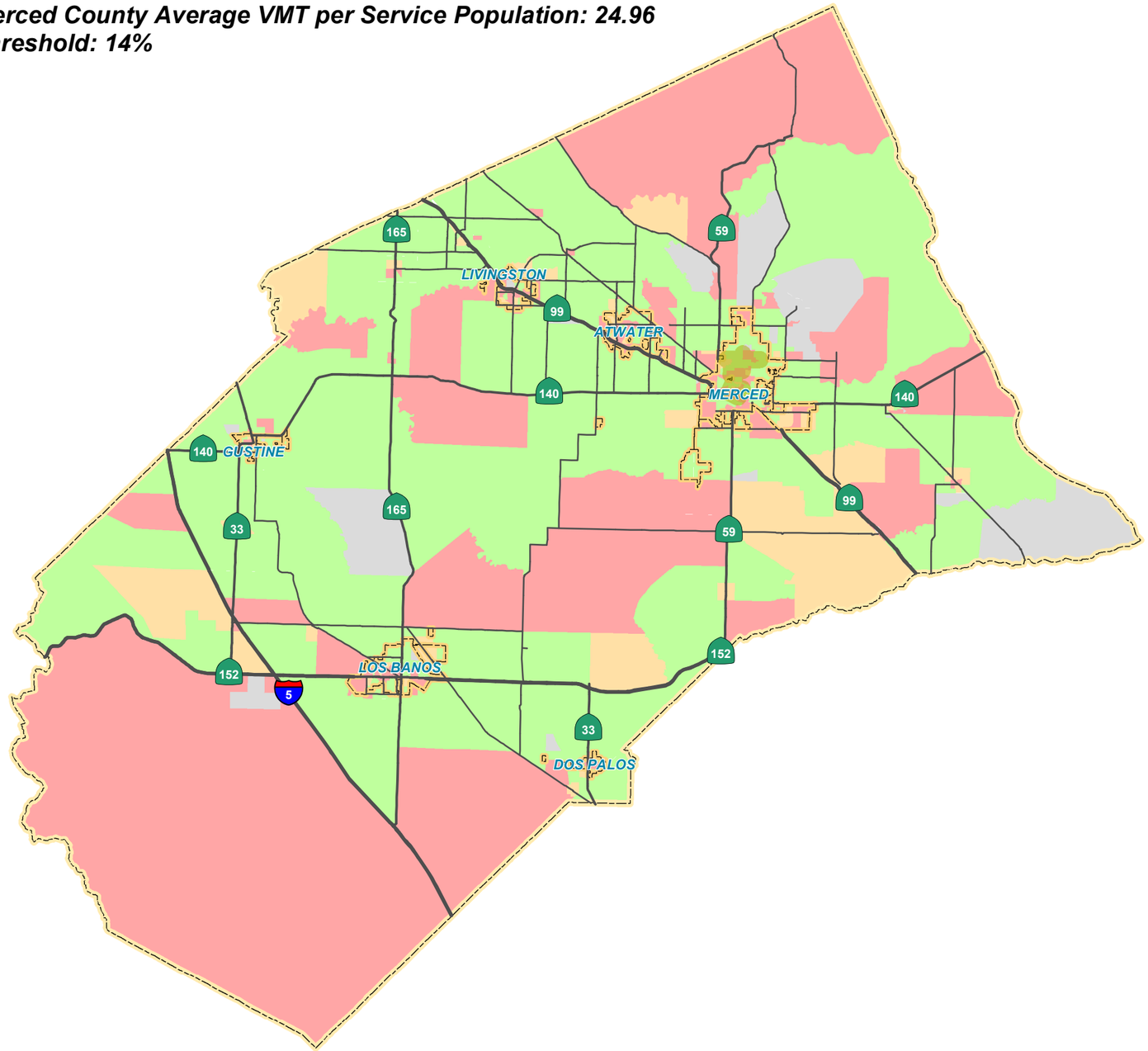
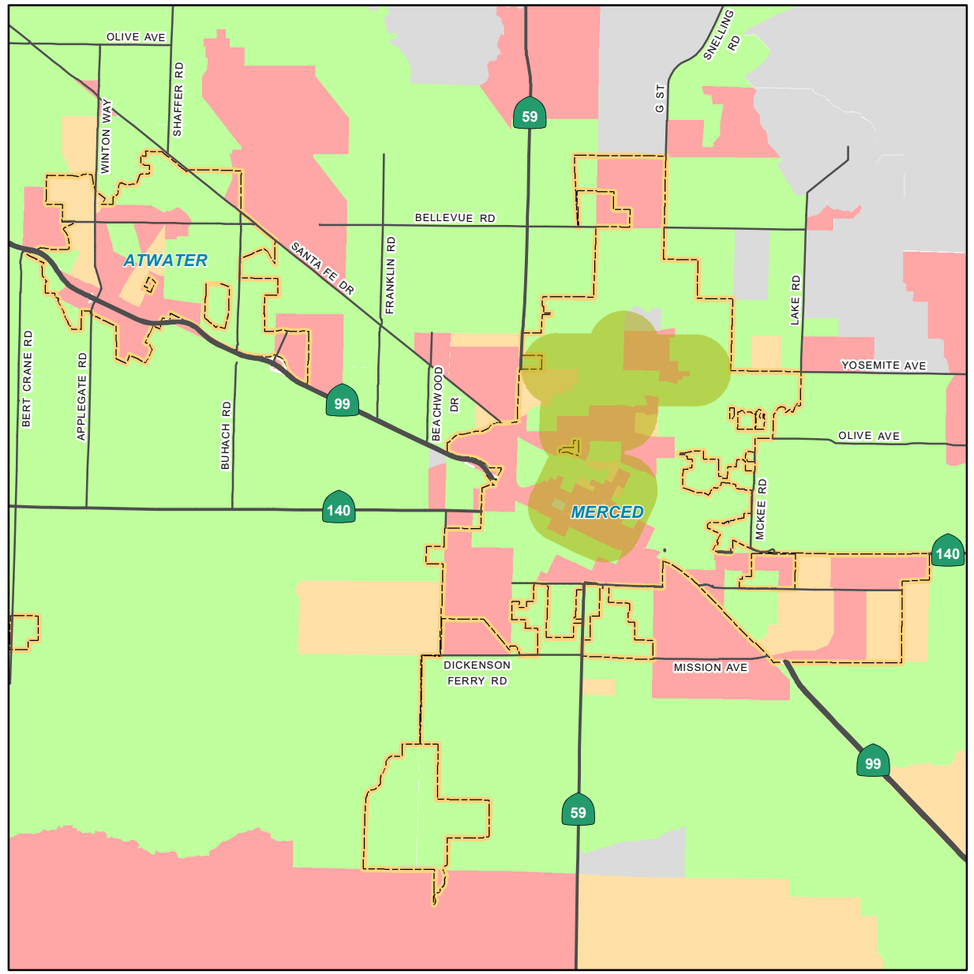
Merced County Average VMT per Service Population: 24.96
Threshold: 14%





LSA

LEGEND

- County of Merced Boundary
- MCAG City Jurisdictions Boundary
- High Quality Transit Area

VMT per Service Population

- No Population or Employment
- Less than 21.47
- 21.47 - 24.96
- Greater than 24.96

0 19375 38750
FEET

SOURCE: MCAG Travel Demand Model 2015 Base Year

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FIGURE 6

Merced County Association of Governments
VMT Thresholds and Implementation Guidelines

VMT per Service Population Screening Map for Merced County

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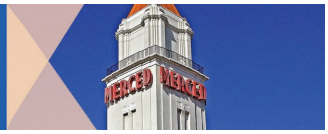
3.2 TRANSPORTATION PROJECTS

Transportation projects refer to capital improvement projects that relate to roadway widening, roadway infrastructure improvements, active transportation projects or operational improvements. The primary attribute to consider with transportation projects is the potential to increase vehicle travel demand, also referred to as 'induced travel.' While the lead agency has discretion to continue to use a delay-based LOS analysis for CEQA disclosure of transportation projects, changes in vehicle travel must be quantified. To comply with SB 743, the lead agency may solely use VMT analysis for CEQA disclosure of transportation impacts, but may also require a LOS analysis for design, traffic operations, and safety purposes to comply with the lead agency's General Plan Circulation Element. The TA identifies the types of transportation improvement projects that would not likely lead to a substantial or measurable increase in vehicle travel and which would, therefore, not require further VMT analysis. These include the following:

- 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) that do not add additional motor vehicle capacity.
- Roadside safety devices or hardware installation such 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 1 mile in length designed to improve roadway safety.
- Installation, removal, or reconfiguration of traffic lanes that are not for through traffic, such as left-turn, right-turn, 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 for use only by transit vehicles.
- Reduction in the 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., high-occupancy vehicles [HOV], high-occupancy toll [HOT] lane traffic, or trucks) from general vehicles.
- Installation, removal, or reconfiguration of traffic control devices, including Transit Signal Priority 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 a new transit service.
- Conversion of streets from one-way to two-way operation with no net increase in the 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.

Additionally, transit and active transportation projects generally reduce VMT and, therefore, may be presumed to cause a less than significant impact on transportation. This presumption may apply to all passenger rail projects, bus and bus rapid-transit projects, and bicycle and pedestrian infrastructure projects. The lead agency may use this CEQA presumption of less than significant impact to aid in the prioritization of capital improvement projects, as the CEQA process for any of these project types would be more streamlined than other capacity-enhancing projects.



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4.0 VMT THRESHOLD ANALYSIS FOR DEVELOPMENT PROJECTS

4.1 THRESHOLDS

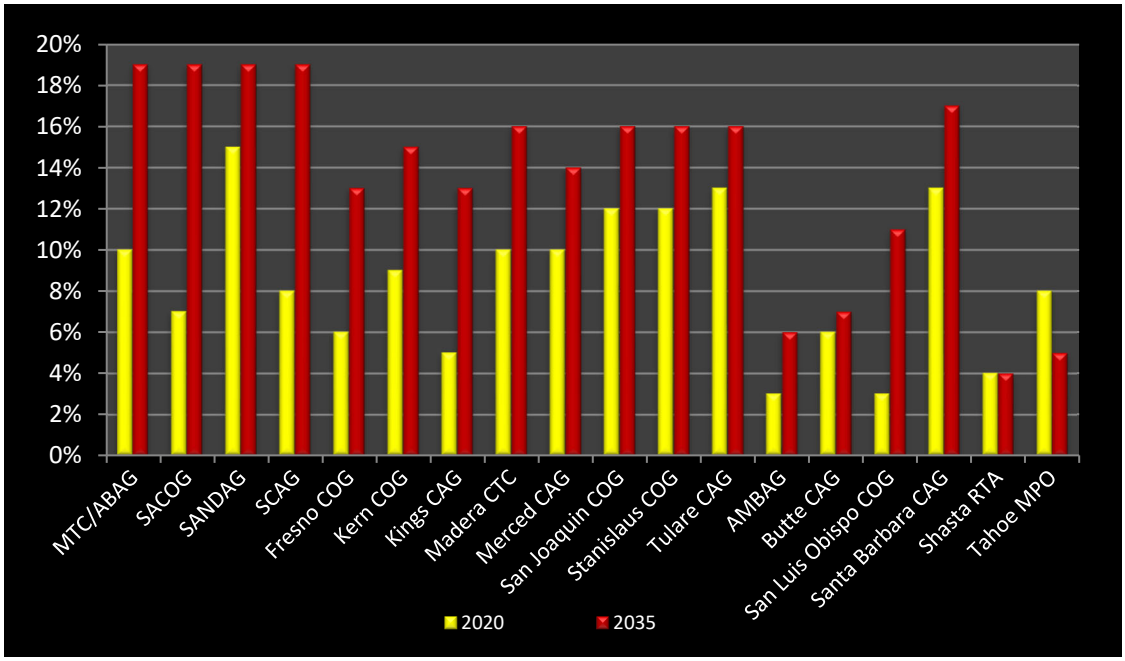
The TA clarifies that SB 743 and all CEQA VMT transportation analyses refer to automobile travel. Here, the term automobile refers to on-road passenger vehicles, specifically cars and light-duty trucks. Heavy-duty trucks should be addressed in other CEQA sections (air quality, greenhouse gas, noise, and health risk assessment analysis) and are subject to regulation in a separate collection of rules under CARB jurisdiction. This approach was amplified by Chris Ganson, former Senior Advisor for Transportation at OPR, in a presentation to the Fresno Council of Governments (October 23, 2019) and by Ellen Greenberg, the California Department of Transportation (Caltrans) Deputy Director for Sustainability, at the San Joaquin Valley Regional Planning Agencies' Directors' Committee meeting (January 9, 2020).

OPR has identified home-based work trips as the primary type used in the home-based travel demand modeling. This includes residential uses, office uses, and retail uses. The home-based work trip type is the primary trip type generated during the peak hours of commuter traffic in the morning and evening periods.

The focus of transportation impact assessment has shifted from congestion relief to climate resiliency. The purpose of the CEQA analysis is to disclose and ultimately reduce GHG emissions by reducing the number and length of automobile trips. As part of the SB 375 land use/transportation integration process and GHG emissions goal setting, the State and Regional Transportation Planning Agencies have agreed to reduce statewide GHG emissions by an average of approximately 15 percent by 2035 through an approach based on improved integration of land use and transportation planning. Figure 7 illustrates SB 375 regional GHG emissions reduction targets for all the 18 Metropolitan Planning Organizations (MPOs) in California that CARB established in 2018. Furthermore, in its *2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals*, CARB recommends total VMT per capita rates be reduced to approximately 15 percent below existing conditions. While the current target is 15 percent, CARB periodically revises the target based on changing information and, therefore, the target might be revised in the future. Additionally, for purposes of VMT analysis, the existing setting will follow the base year scenario in the regional travel demand model, the MCAG TDM. It is to be noted that the base year scenario in the model is also periodically revised and, as a result, the existing setting will change accordingly.

Specifically, the TA recommends:

- *A proposed (residential) project exceeding a level of 15 percent below existing regional average VMT per capita may indicate a significant transportation impact.*
- *A similar threshold would apply to office projects (15 percent below existing regional average VMT per employee).*
- *VMT generated by retail projects would indicate a significant impact for any net increase in total VMT.*



Source: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets.

Figure 7: SB 375 Regional Plan Climate Targets for California's 18 MPOs

It is noted that the aggregate GHG emission reduction sought after by CARB in the 2017 Scoping Plan is 15 percent statewide. This is one reason OPR believes the 15 percent reduction in VMT is appropriate. The aggregate 15 percent GHG emission reduction applies across all land use and transportation activities and would indicate that the State and its individual MPOs are compliant with the SB 375 goals, the overall State climate change strategy, and Scoping Plan objectives.

CARB establishes GHG targets for each of the 18 MPOs in the State, reviews the SCSs, and makes a determination of whether the SCSs would achieve GHG reduction targets if implemented. In the spring of 2018, CARB adopted new GHG targets for all the 18 MPOs in the State based on the 2017 Scoping Plan and other new data as illustrated in Figure 7. CARB established a 14 percent GHG reduction target for 2035 for the Merced region. The State recognizes that Merced County's contribution to the aggregate 15 percent statewide GHG emission reduction is 14 percent. Other regions may achieve lower reductions to achieve the aggregate statewide goal.[1] As such, reduction in GHG directly corresponds to reduction in VMT. In order to reach the statewide GHG reduction goal of 15 percent, the Merced region must reduce GHG by 14 percent. The method of reducing GHG by 14 percent is to reduce VMT by 14 percent as well.

Therefore, Merced County member jurisdictions may establish a threshold for land use developments, specifically residential and office, of 86 percent of the existing regional average as indicative of a significant transportation impact. For retail projects, increase in total regional roadway VMT with the implementation of the project would indicate a significant transportation impact. As such, total

[1] The latest GHG targets by region can be found at https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets.

roadway VMT needs to be calculated using the final roadway assignment outputs from the MCAG TDM.

Other distinct land uses are not identified for threshold development in the OPR TA. For other non-residential projects, a significance threshold of 86 percent of existing regional average VMT per employee is recommended. The only exceptions would be hotels, hospitals, medical offices, and related projects. These land uses are service oriented facilities which includes both visitors and employees. Therefore, for such projects, VMT per service population (population/users + employment) is recommended as the VMT metric. Any other similar use could be evaluated using the same metric subject to approval of the methodology by the local jurisdiction on a case-by-case basis. As such, a significance threshold of 86 percent of the existing regional average VMT per service population is recommended for these projects.

Evaluation of mixed-use projects may be for each land use component of the project using the most appropriate VMT metric. Credit for internal trip capture may be made. Internal trip capture may be calculated using the latest edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* the MCAG TDM, or other applicable sources approved by the lead agency. The appropriate methodology for calculating project's internal capture would be determined in consultation with the lead agency's Traffic Engineer. The significance threshold for these projects would be the respective VMT thresholds for its different land use components.

A lead agency may develop VMT thresholds for other land uses as desired. However, it would require disclosure of substantial evidence, including the General Plan findings, and other traffic and air quality forecasting support data. Additionally, if the lead agency wishes to establish some other threshold less stringent than the 86 percent of the existing regional average recommended for residential and office projects, a body of substantial evidence would be necessary.

4.2 IMPACT ASSESSMENT

Figure 8 illustrates the VMT screening methodology for development entitlement projects. Additionally, Figures 9-A through 9-C illustrate the VMT analysis methodology for non-screened projects. Every development application is unique and may create alternative or modified steps through the process described in the aforementioned figures. Each step that diverges from this standard process should be accompanied with substantial evidence demonstrating compliance with other climate change and GHG emission reduction laws and regulations.

4.2.1 Agency Communication

As part of the site plan review process, the applicant should provide a detailed project description, including potential number of residents added or created by the project, and the applicable VMT analysis methodology. Key elements include a description of the project in sufficient detail to generate trips and the potential catchment area (i.e., trip lengths if no modeling is undertaken), estimated project VMT, project design features that may reduce the VMT from the project development, and the project location and associated existing regional VMT percentages. Further, the applicant or their consultant shall prepare a transportation analysis scope of work for review and approval by the lead agency.

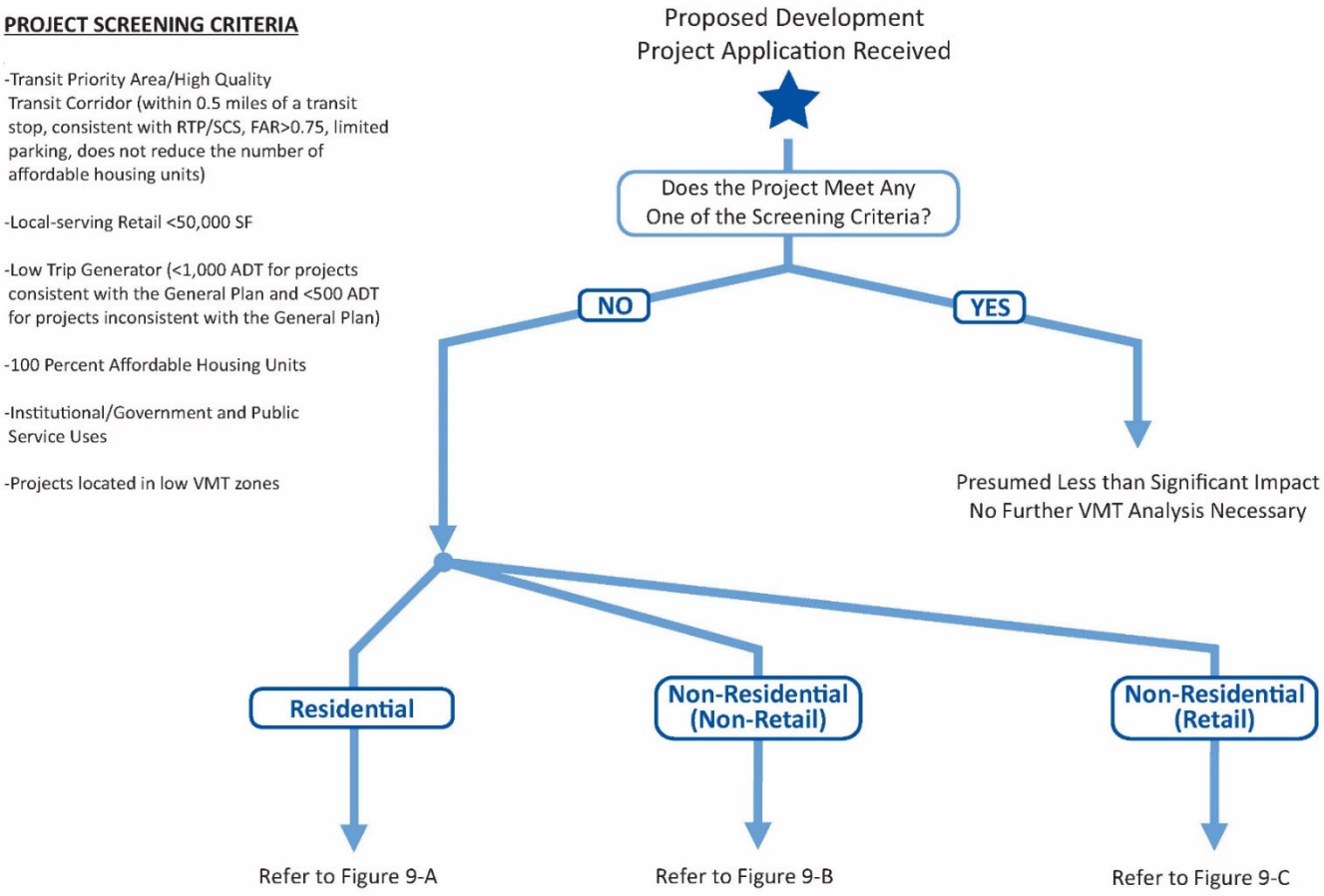


Figure 8: VMT Screening Methodology for Development Projects

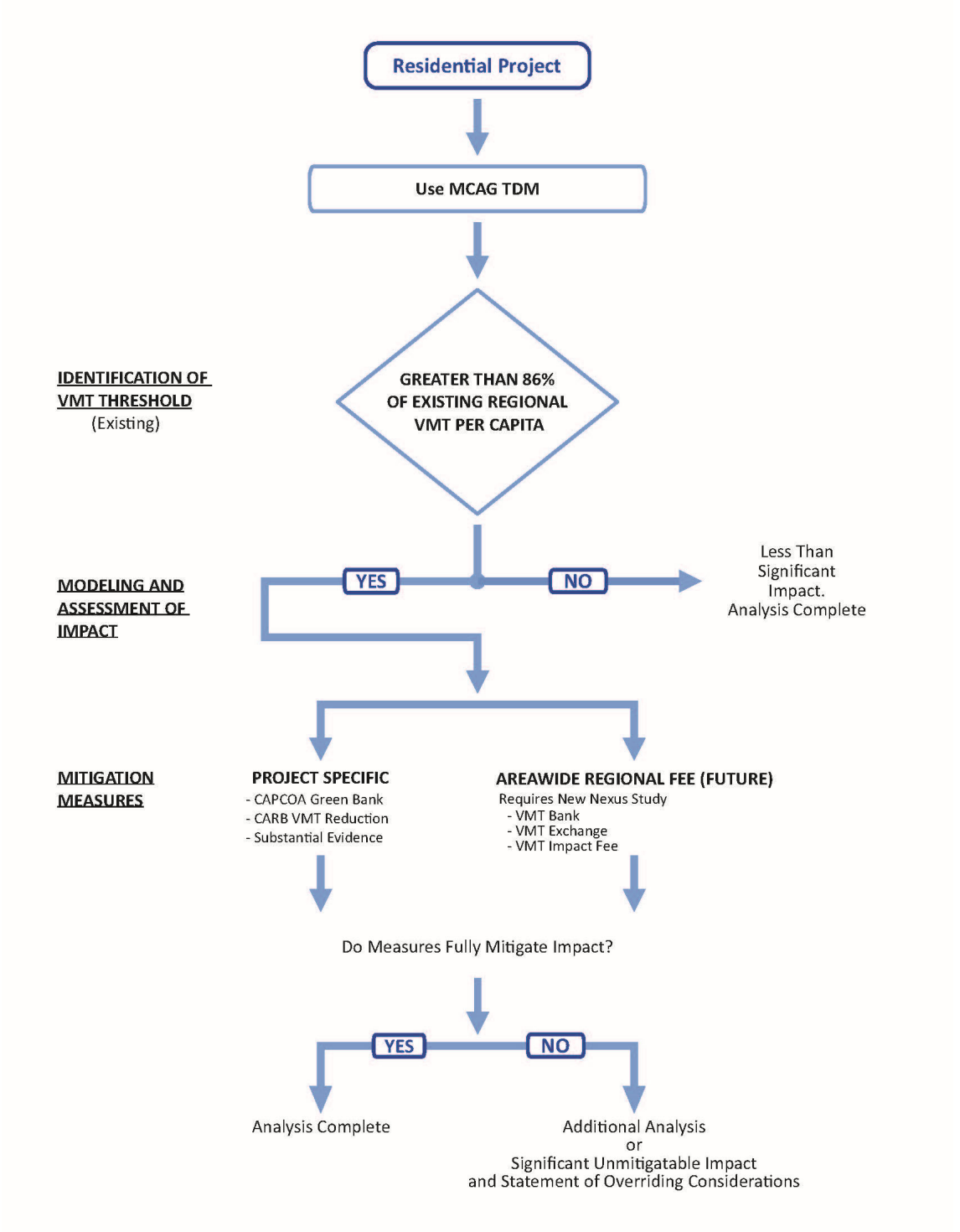


Figure 9-A: VMT Analysis Methodology for Non-Screened Residential Projects

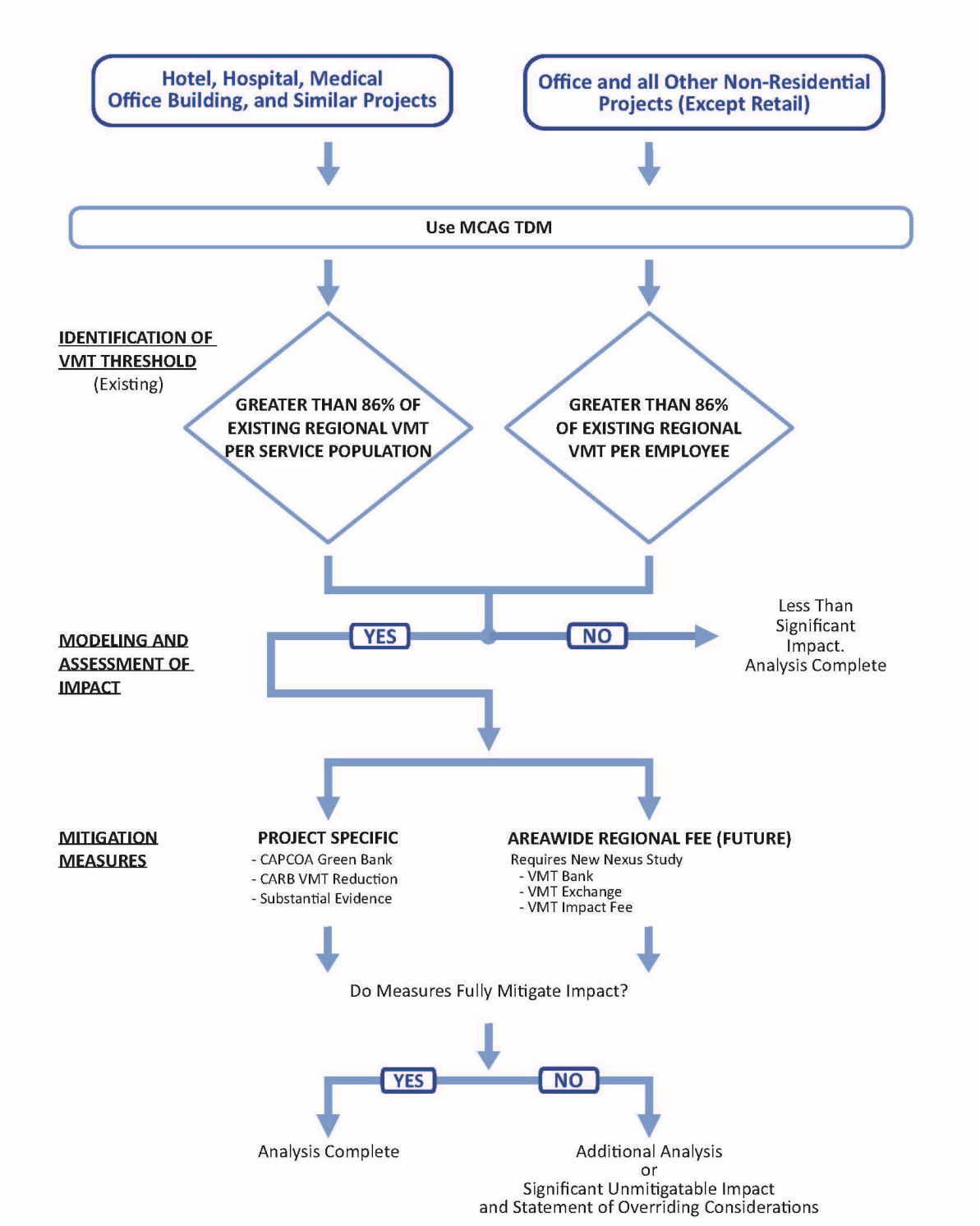


Figure 9-B: VMT Analysis Methodology for Non-Screened Non-Residential (Non-Retail) Projects

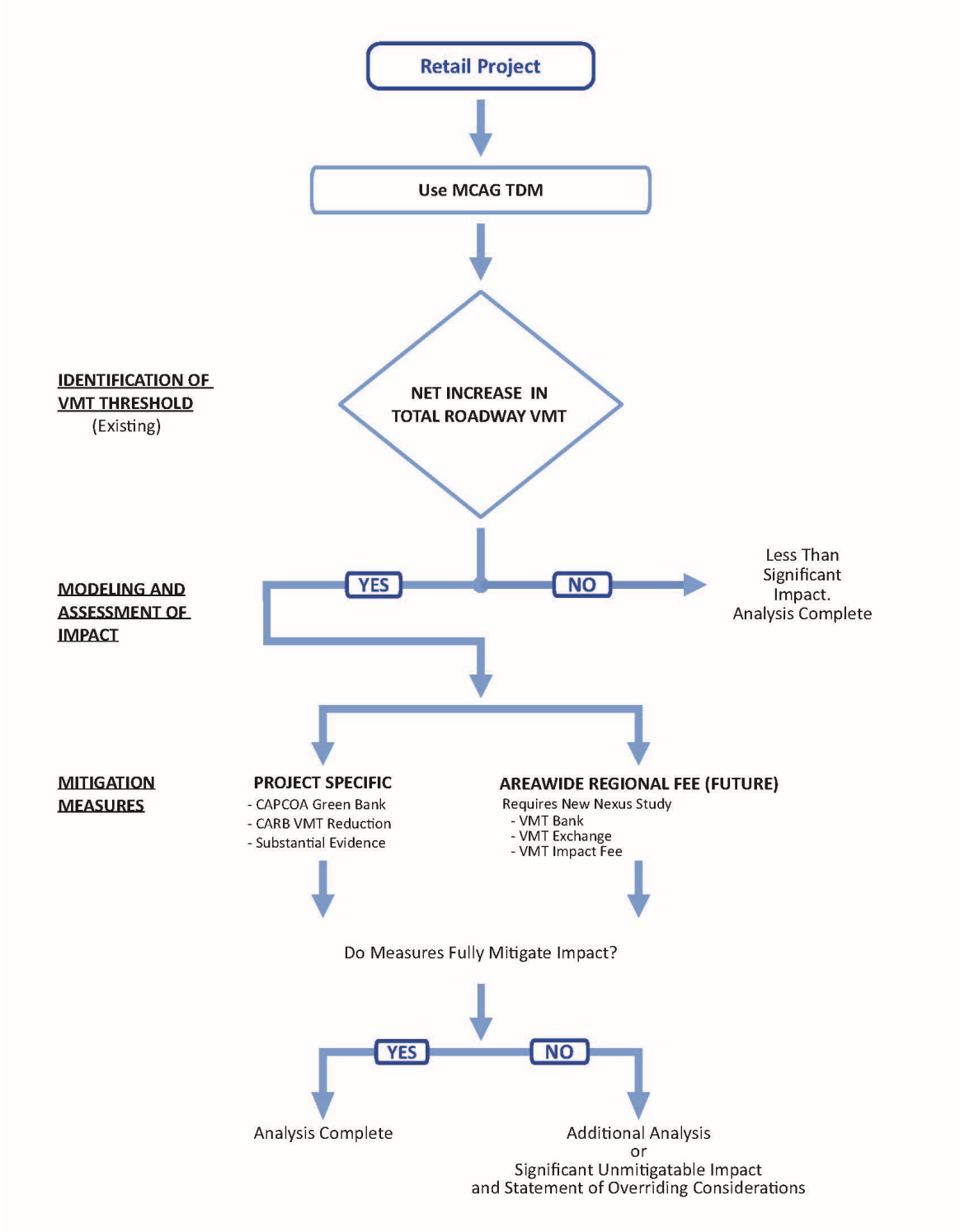


Figure 9-C: VMT Analysis Methodology for Non-Screened Non-Residential (Retail) Projects

Projects that will influence Caltrans facilities may be subject to the Caltrans Local Development-Intergovernmental Review program. As part of the program, Caltrans may review the VMT analysis methodology, findings, and mitigation measures to ensure consistency with statewide standards.

4.2.2 Project Screening

Once a development application is filed and determined to be complete for processing purposes, project screening may commence. If the project meets any one of the screening criteria, it may be presumed to have a less than significant transportation impact. No further VMT analysis would then be necessary and a Notice of Exemption may be filed. The CEQA document should enumerate the screening criteria and how the project meets or exceeds that applicable VMT threshold.

If project screening does not apply, a VMT analysis may be required. The extent of this analysis may be a simple algebraic demonstration or a more sophisticated traffic modeling exercise. This distinction is addressed later in this report.

4.2.3 VMT Identification

The project land use type will determine the appropriate metric to use (i.e., VMT per capita, VMT per employee, VMT per service population, or total VMT). Appropriate VMT metrics for different land uses are stated in Table D.

Table D: VMT Metrics for Land Use Projects

Land Use	VMT Metric
Residential	VMT per Capita
Office	VMT per Employee
Retail	Total VMT
Hotel, Hospital, Medical Office Building, or any similar use with approval from local jurisdiction	VMT per Service Population
Mixed-Use, Land Use Plan (General Plan/Specific Plan)	Respective VMT metrics for its different land use components
Other Land Uses	VMT per Employee

VMT = Vehicle Miles Traveled

For all projects that require a VMT analysis, use of the MCAG TDM is required unless the project includes a special land use that is difficult to analyze using a travel demand model. For the latter, the lead agency may require a qualitative analysis or an analysis using empirical data as applicable to the project.

Next, the project-generated VMT (per capita, per employee, per service population, or total) is compared to the appropriate significance threshold provided in Table E. If the project VMT metric is less than the significance threshold, the project is presumed to create a less than significant impact. No further VMT analysis for CEQA purposes would be required.

Should project VMT metrics exceed the significance threshold, mitigation measures will be required. It should be noted that the thresholds identified in Table E are based on the current version of the

MCAG TDM (provided by MCAG in May 2022). These thresholds are subject to change when a newer version of the MCAG TDM is available.

Table E: Significance Thresholds for VMT Analysis

VMT Metric	Threshold
VMT per Capita	10.92
VMT per Employee	8.79
VMT per Service Population	21.47

Source: 2015 MCAG TDM
VMT = Vehicle Miles Traveled

4.3 MITIGATION MEASURES

State law requires the project applicant to identify feasible offsets to mitigate VMT impacts generated by the proposed project. These may come from the mitigation strategies provided in this document (as described in Table F at the end of Chapter 7.0) or selected by the applicant based on their CEQA project experience and expertise. The lead agency must approve and accept the final VMT mitigation program ascribed to the project and the related VMT percentage reduction. A detailed discussion about project-specific mitigations is included in Section 7.2.1.

If it is determined that the selected VMT mitigation measures effectively reduce the project impact to less than the applicable threshold, the project is presumed to have an impact mitigated to a less than significant level. No further VMT analysis is required. If the project's VMT impact cannot be mitigated, the lead agency may (1) request the project be redesigned to reduce the VMT impact, or (2) require the preparation of an EIR with a Statement of Overriding Considerations (SOC) for the transportation impacts associated with the project. All feasible mitigation measures must be assigned to and carried out by the project even if an EIR/SOC is prepared.

5.0 VMT THRESHOLD ANALYSIS FOR TRANSPORTATION PROJECTS

The *2022 State CEQA Guidelines* include Section 15064.3.b.(2) to address transportation projects. It reads:

> *For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements.*

The lead agency may continue to use motor vehicle delay (LOS) metrics for transportation project design and traffic operation purposes as long as impacts related to "other applicable requirements" are disclosed. This has generally been interpreted as VMT impacts and other State climate objectives. These other applicable requirements may be found in other parts of an environmental document (e.g., air quality and GHG), or may be provided in greater detail in the transportation section.

In addition, projects processed under federal environmental rules have traditionally included a traffic operational analysis to meet the requirements of the National Environmental Policy Act. Federal review is generally required if a project uses federal funding or involves federal lands. Additional safety evaluations may need to be conducted outside the CEQA process since some desirable safety improvements may not be directly related to CEQA safety impacts.

For projects on the State Highway System, Caltrans will require sponsoring agencies to use VMT as the CEQA transportation impact assessment metric, and to evaluate the amount of VMT that is "attributable to the project" (January 9, 2020, conference). Caltrans' Intergovernmental Review process will review environmental documents for capacity-enhancing projects for their analysis of VMT impact.

A VMT assessment of a transportation project should disclose the VMT profile without the project and the difference in the VMT profile with the project. Any increase in VMT attributable to the proposed transportation project would result in a significant impact. A significant transportation project impact is presumed when VMT increases with the project as compared to the 'No Project' scenario.

Capacity improvement projects have the potential of producing significant transportation impacts because they tend to induce new travel. The OPR TA describes induced travel as the additional motor vehicle travel that is generated by the newly available capacity on the roadway. Induced travel may include route switching, time-of-day change, mode shift to single occupancy vehicle, longer trips, new trips to existing destinations, and additional travel due to new development. Current traffic models have limited abilities to forecast new trips and new developments associated with roadway capacity improvements, as land use or socioeconomic databases are fixed to a specific horizon date. OPR refers to a limited number of published studies that seek to define travel demand elasticities.

The most recent major study (Duranton & Turner 2011, p. 24) estimates an elasticity of 1.0, meaning that every one percent change in lane miles results in a one percent increase in VMT.

One method to quantify induced growth is recommended by the OPR TA:

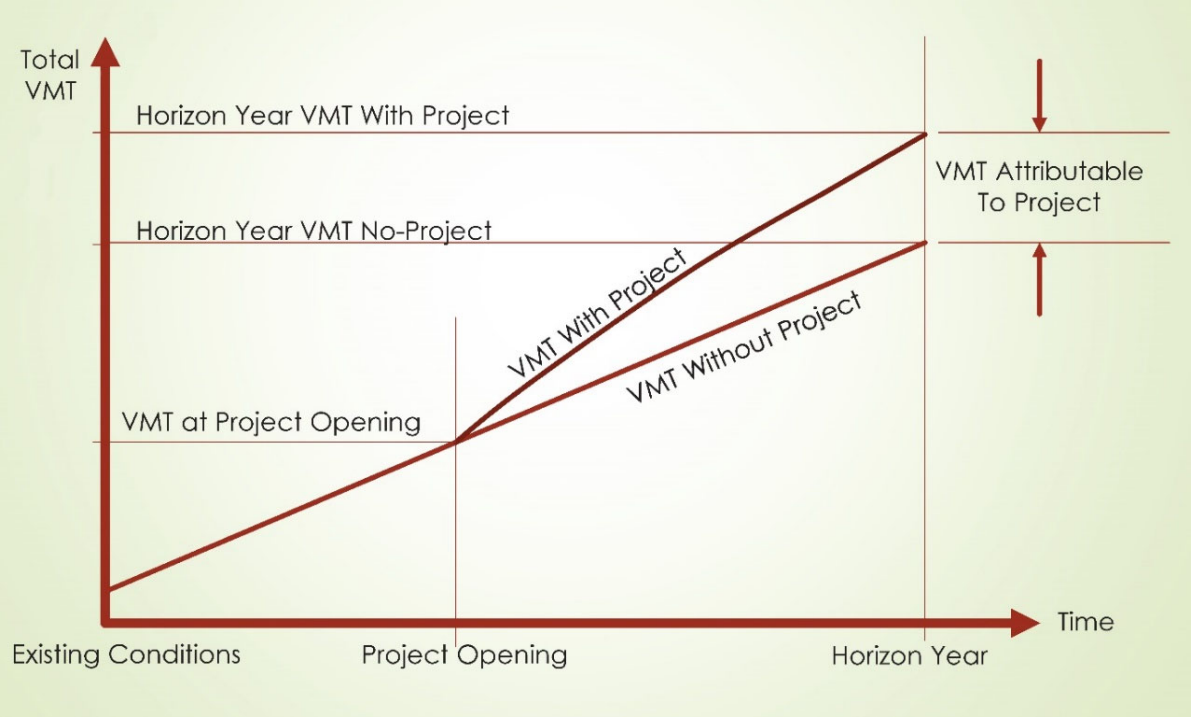
To estimate VMT impacts from roadway expansion projects:

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

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

OPR assigns this induced growth to project-induced changes in land use; that is, new land uses that are not included in any approved general or area plan and not accounted for in any traffic-forecasting tool.

Figure 10 provides a representative illustration of induced VMT attributable to a project.



Source: Presentation: Caltrans Transportation Analysis under CEQA or TAC: Significance Determinations for Induced Travel Analysis (SHCC Pre-Release Session 2 Jeremy Ketchum, Division of Environmental Analysis, Caltrans; March 2, 2020)

Figure 10: Induced Travel – VMT Attributable to Project

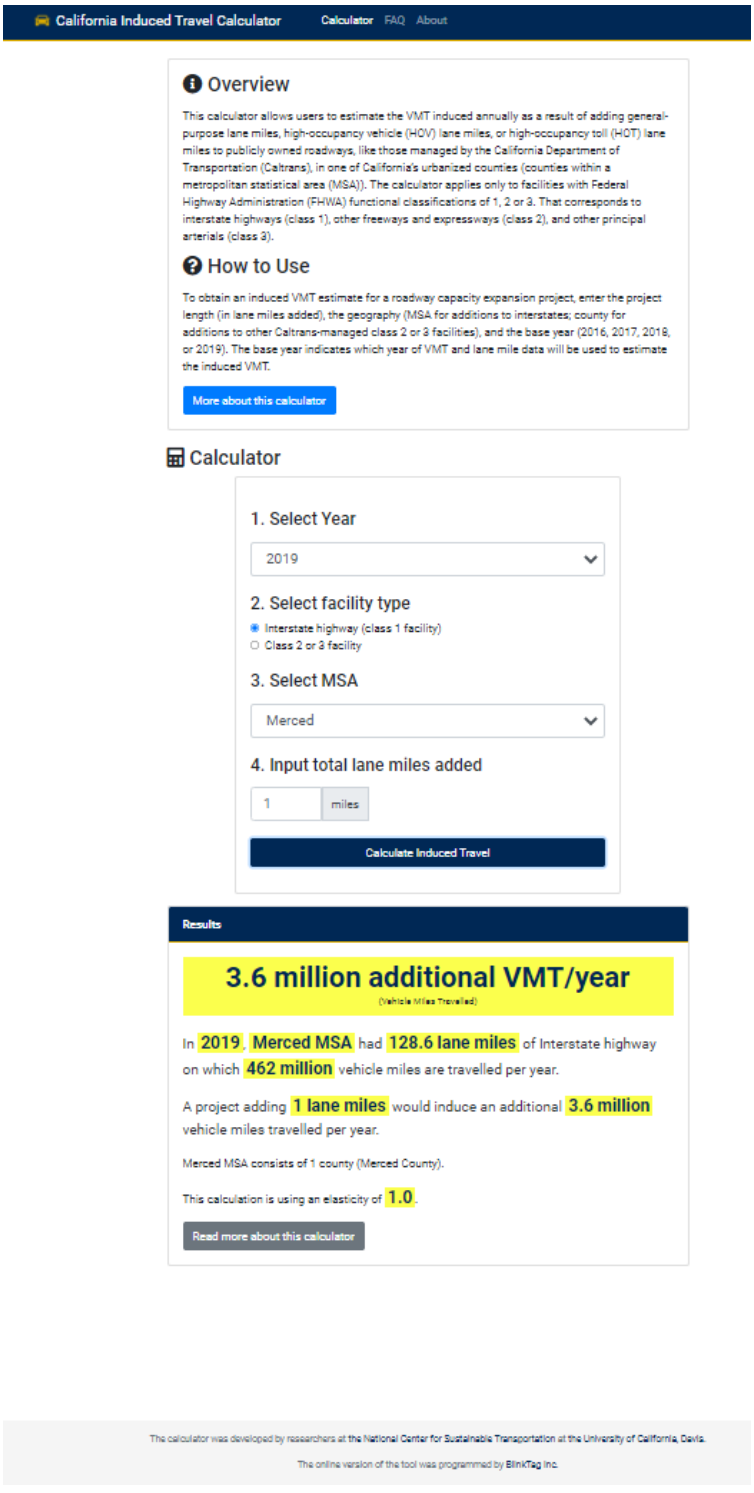
Caltrans has identified a computerized tool to estimate VMT generation from transportation projects. The tool (https://travelcalculator.ncst.ucdavis.edu) was developed by the National Center for Sustainable Transportation (NCST) at the University of California, Davis, and is based on travel demand elasticities and the relationship of lane mile additions with growth in VMT. It uses Federal Highway Administration definitions of facility type and ascribes VMT increases to each facility. Output data include increases in million miles of VMT per year. Caltrans is investigating the use of this tool for all of its VMT analyses of capital projects on the State Highway System. The NCST tool is available at https://blinktag.com/induced-travel-calculator. Figure 11 provides an illustration of that tool.

Other options to identify induced growth- and project-related VMT provided by the TA include:

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

A final advisory from the TA is provided below:

> *Whenever employing a travel demand model to assess induced vehicle travel, any limitation or known lack of sensitivity in the analysis that might cause substantial errors in the VMT estimate (for example, model insensitivity to one of the components of induced VMT described above) should be disclosed and characterized, and a description should be provided on how it could influence the analysis results. A discussion of the potential error or bias should be carried into analyses that rely on the VMT analysis, such as greenhouse gas emissions, air quality, energy, and noise.* (OPR TA page 34)



Source: https://blinktag.com/induced-travel-calculator/index.html

Figure 11: Caltrans Induced Travel Calculator

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6.0 VMT THRESHOLD ANALYSIS FOR LAND USE PLANS

The OPR TA provides guidance on the treatment of CEQA traffic analyses for land use plans (General Plan, Specific Plan) as follows:

- Analyze the VMT outcomes over the full area over which the plan may substantively affect travel patterns (the definition of region).
- VMT should be counted in full rather than split between origins and destinations (the full impact of the project VMT).

Specifically, OPR states, "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." (OPR TA page 18) This recommendation refers to a threshold of 15 percent lower than the existing regional average for residential and office uses and no net gain for retail land uses.

To assess a land use plan, use of a traffic-forecasting tool is recommended. The total VMT for the plan may be identified for all trips and all potential VMT contributors within the plan area. Model runs may be conducted for the existing base year and the horizon year (the future year scenario analyzed in the Circulation Element of the lead agency's General Plan) with the project (plan).

SB 375 establishes ambitious and achievable GHG reduction targets for the 18 MPOs in the State. Achievement of these targets is to be accomplished through the improved integration of regional land use and transportation planning processes; not solely through the imposition of new regulation on passenger cars and light-duty trucks.

CARB reviews the SCS that is produced as part of the RTP produced by each of the State's MPOs. The SCS details the strategies and programs the regional agencies are planning to implement to achieve its designated GHG emission reduction targets. CARB approved the new GHG reduction targets for all 18 MPOs in the State in the spring of 2018. The 2018 targets are applicable to the third SCSs for the MPOs.

Other legislative mandates and State policies are also supportive of GHG reduction targets. A sample of these include:

- Assembly Bill 32 (2006) requires statewide GHG emissions reductions to 1990 levels by 2020 and continued reductions beyond 2020.
- SB 32 (2016) requires at least a 40 percent reduction in GHG emissions from 1990 levels by 2030.
- Executive Order (EO) B-30-15 (2015) sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.
- EO S-3-05 (2005) sets a GHG emissions reduction target of 80 percent below 1990 levels by 2050.
- EO B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation.

These mandates suggest that a land use plan consistent with the regional RTP/SCS would generally help achieve the target GHG reductions for the region.

California PRC Section 15064.3(b)(4) states (in part) the following:

> *A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household, or in any other measure.*

Since VMT is the largest contributor to GHG emissions, a land use plan consistent with regional RTP/SCS GHG reductions target would generally not have a significant VMT impact. Therefore, the recommended methodology for conducting VMT assessments for land use plans is to compare the existing VMT per capita, VMT per employee, and/or VMT per service population for the region with the respective expected horizon year VMT metrics for the different land use components (VMT per capita, VMT per employee, and/or VMT per service population) of the land use plan (project). If there is a net increase in the VMT metric under horizon year conditions, then the project will have a significant impact.

7.0 MITIGATION STRATEGIES

When a lead agency identifies a potentially significant CEQA VMT impact according to the thresholds described in this report, the agency must identify feasible mitigation measures to avoid or substantially reduce that impact. Unlike LOS impacts, which may be mitigated with location-specific motor vehicle delay improvements, VMT impacts typically require a more regional approach to mitigation, including the provision of incentives to effect changes in travel behavior. Enforcement of mitigation measures will still be subject to the mitigation monitoring requirements of CEQA, as well as the regular police powers of the agency. VMT mitigation measures may also be incorporated into the design of plans, policies, regulations, or projects.

7.1 DEFINITION OF MITIGATION

Section 15370 of the *2022 State CEQA Guidelines* defines mitigations as follows:

> *"Mitigation" includes:*
>
> *a. Avoiding the impact altogether by not taking a certain action or parts of an action.*
>
> *b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.*
>
> *c. Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.*
>
> *d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.*
>
> *e. Compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements.*

Section 15097 of the *CEQA Guidelines* states that, "the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects. A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program."

VMT mitigations may not necessarily be physical improvements. Such improvements are complex in nature and will significantly depend on changes in traveler behavior. Therefore, it will be important that lead agencies develop an appropriate monitoring program to ensure the implementation of these mitigation measures throughout the life of a project, in compliance with CEQA. The lead agency must also coordinate with other responsible agencies as part of the mitigation monitoring program to evaluate the ongoing feasibility and durability of the mitigations.

Historically, mitigation measures for LOS-based transportation impacts have addressed either trip generation reductions or traffic-flow-capacity enhancements. LOS mitigation measures typically

include physical infrastructure improvements adding capacity to intersections, roadways, ramps, and freeways. However, transportation demand management activities, active transportation amenities, and other measures designed to reduce the number of new single-occupancy vehicle trips are also potential LOS mitigation strategies.

VMT mitigation measures are significantly different. Most VMT mitigations may seem feasible from a theoretical perspective, but practical implementation of these strategies as formal CEQA mitigation measures in perpetuity is yet to be tested. Several of these mitigations are contextual and behavioral in nature. Their success will depend on the size and location of the project as well as expected changes in travel behavior. For example, a project providing a bike share program does not necessarily guarantee a travel mode change among the project's affected population; the level of improvement may be uncertain and subject to the travel preferences and attitudes of the population affected.

LOS mitigations (such as addition of turn lanes) focus more on rectifying a physical CEQA impact (strategy "c" of *State CEQA Guidelines* Section 15370). On the contrary, the majority of VMT mitigations (such as commute trip-reduction programs) aim at reducing or eliminating an impact over time through preservation and monitoring over the life of the project (strategy "d" of *State CEQA Guidelines* Section 15370). Additionally, some VMT mitigations (such as those focused on land use/ location-based policies) aim at minimizing impacts by reducing the number of trips generated by the projects (strategy "b" of *State CEQA Guidelines* Section 15370).

Furthermore, it may be determined that some VMT impacts are not able to be feasibly mitigated at the project level. Most VMT impacts occur within the context of a regional scale of analysis. The incremental change in VMT associated with a project in its particular locational setting might indicate a greater VMT deficit than individual mitigation strategies can offset. Only a regional solution (e.g., completion of a transit system, purchase of more transit buses, or gap closure of a bicycle lane network) may offer the incremental change necessary to reduce the VMT impact to an appropriate level of significance. Also, VMT, as a proxy for GHG emissions, may not require locational specificity. A project does not necessarily need to diminish the VMT at the project site to provide regional or statewide VMT and GHG reduction benefits. Offsets in an area where the benefit would be greater will have a more effective reduction in VMT and GHG and contribute to achievement of regional and statewide climate goals. This regional perspective provides the basis for cap-and-trade style VMT mitigation strategies.

The issues of regional scale, appropriate and timely fair share contributions from projects and/or local jurisdictions (partial versus comprehensive participation), and geographic ambiguity confound the certainty of the lead agency's identification of an effective VMT mitigation strategy. Section 15126.4 of the *State CEQA Guidelines* states, "Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. **Formulation of mitigation measures shall not be deferred until some future time."** [Emphasis added.] Regional VMT mitigation is considered the most effective method for large-scale VMT reduction, as cost and implementation barriers are often greater than one project may feasibly accommodate. However, regionally scaled VMT mitigation strategies may be provided in the form of mitigation banks, fees, and/or exchanges, with individual projects subject to contribute to these programs consistent with applicable provisions to ensure compliance and consistency with CEQA and other legal requirements.

Section 21099 (b) (4) of the PRC states, "This subdivision [requiring a new transportation metric under CEQA] does not preclude the application of local general plan policies, zoning codes, conditions of approval, thresholds, or any other planning requirements pursuant to the police power or any other authority." Hence, although automobile delay will no longer be considered a significant impact under CEQA, the lead agency may still require projects to meet the LOS standards designated in its zoning code or general plan. Therefore, a project may still be required to propose LOS improvements for congestion relief in addition to the implementation of any VMT mitigation strategies as required by CEQA.

7.2 MITIGATION MEASURES AND PROJECT ALTERNATIVES

7.2.1 Land Development Projects and Community/General Plans

Transit in Merced
Source: https://www.mcagov.org/140/Transit-Joint-Powers

Mitigations and project alternatives for VMT impacts have been suggested by the OPR. VMT mitigations can be extremely diverse and can be classified under several categories such as land use/location, road pricing, transit improvements, commute trip reduction strategies, and parking pricing/policy. However, the issue with VMT mitigations is the quantitative measurement of the relief provided by the strategies. How much VMT reduction does a transportation demand management program, a bike share program, a transit route, or one mile of sidewalk provide? Improvements related to VMT reduction strategies have been quantified in sources such as the California Air Pollution Control Officers Association (CAPCOA) report *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA Manual) Final Draft,* December 2021, and by various resources provided by CARB. This information is generally presented with a wide range of potential VMT reduction percentages.

Table F provides a summary of various VMT mitigation measures and project alternatives presented in the *CAPCOA Manual* (only those strategies directly attributed to transportation) for development projects. For any VMT mitigation measure, the project applicant will be required to provide substantial evidence while identifying a project-specific value. If that information is not available, the project should apply the low point of provided ranges for VMT reduction. Where a mitigation strategy does not have an identified VMT reduction range, the project applicant would be required to provide a reduction estimate supported by evidence.

As for land use plans, the OPR TA does not specifically identify any VMT mitigations. The potential VMT mitigation measures for community/general plans are similar to those available for development projects, with certain modifications. Therefore, the mitigation measures provided in Table F can be used as appropriate. Additional measures may also be applied with substantial evidence.

It must be noted that Table F provides only a summary of the VMT mitigations provided in the sources indicated above. The reader should refer to the original source for further details and for subsequent updates to the mitigation measures. Also, Table F does not provide an exhaustive list of VMT

mitigation measures for offsetting CEQA transportation impacts. Other measures may also be accepted by the lead agency based on the provision of substantial evidence.

As additional mitigation measures are evaluated to offset VMT impacts in the future for the *State CEQA Guidelines* process, linkages between a specific strategy and its quantified incremental VMT reduction effect must be established. This process may be based on the observations and measurements provided by other sources or by the lead agency's experience in these practices. The key to effective VMT mitigation is to base its efficacy on real and substantial evidence.

7.2.2 Transportation Projects

Although OPR provides detailed guidance on the assessment of induced-growth impacts associated with transportation improvement projects, it leaves the subject of specific VMT mitigation measures ambiguous. Only four strategies are recommended as potential mitigation options:

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

No quantified reduction percentage is allocated to these strategies and currently available data do not offer any substantial evidence that may provide guidance on levels of significance after implementation of these strategies. Review of the four recommended mitigation strategies suggests that OPR is directing strategies away from general-purpose mixed-flow lanes on expressways, freeways, and arterial highways. Additionally, the project description and Purpose and Need may conflict since congestion relief measures will conflict with VMT reduction strategies. The lead agency would be subject to an SOC for the capital project VMT impact.

7.3 FUNDING MECHANISMS

The change in methodology used for the assessment of CEQA transportation impacts from LOS to VMT will lead to a shift in and the scale of mitigation efforts from local and project-specific, to a more regional approach. OPR acknowledges the regional nature of VMT impacts and states that regional VMT reduction programs and fee programs (in-lieu fees and development impact fees) may be appropriate forms of mitigation. Fee programs are particularly useful to address cumulative impacts. It is very important for the lead agency to coordinate with MCAG to develop such mitigation programs that may be used to fund new transit service or develop applicable active transportation plans or other regionally scaled VMT mitigation activities. These programs are regional in nature and best suited for administration by a regional agency. Projects may be able to pay into the fee program to offset project VMT impact. Regional agencies may also wish to coordinate with appropriate stakeholders, including participating local jurisdictions, developers, and other interests while conducting nexus studies and checking for rough proportionality and compliance with CEQA.

Most of the VMT mitigations included in Table F are applicable in urban areas. They are less effective in suburban and rural contexts, where traditional transportation demand management strategies are less

feasible. Thus, site-specific strategies are more suitable in more densely urbanized areas, whereas program-level strategies may be more appropriate for some projects located in suburban or rural areas. In the latter approach, the cumulative VMT mitigation contributions provided in support of individual developments may be used to fund regional VMT reduction strategies that would not be feasible or cost-effective at the individual project scale. Apart from fee programs, program-based mitigation strategies may include VMT mitigation exchanges and/or VMT mitigation banks. The VMT mitigation exchange concept requires a developer to select and implement mitigation project(s) from a predetermined list of projects that would serve to reduce the excess new VMT generated by the proposed project. On the other hand, a mitigation banking program would assign monetary values for VMT reductions that would allow developers to purchase the applicable number of VMT reduction credits. These credits would be used to fund larger, regionally scaled VMT mitigation projects throughout the affected region.

As previously discussed, VMT impacts are regional in scope. Hence, there may at times be mitigation requirements that extend beyond the control of the lead agency, and without the ability of the lead agency to manage these mitigations, the impacts might remain significant and unaddressed. Additionally, the identification and management of regionally scaled improvements where developers contribute their fair share to mitigate impacts might prove to be difficult. Therefore, the lead agency may choose to work collaboratively with other jurisdictions within the region to ultimately establish VMT mitigation fee programs, mitigation banks, or exchanges to establish a regional mitigation pathway where developers contribute to a regionally administered VMT mitigation funding pool in a manner commensurate to the impact of their individual project. Procedural flow charts for VMT mitigation banks, exchanges, and impact fees are illustrated in Figures 12, 13, and 14, respectively.

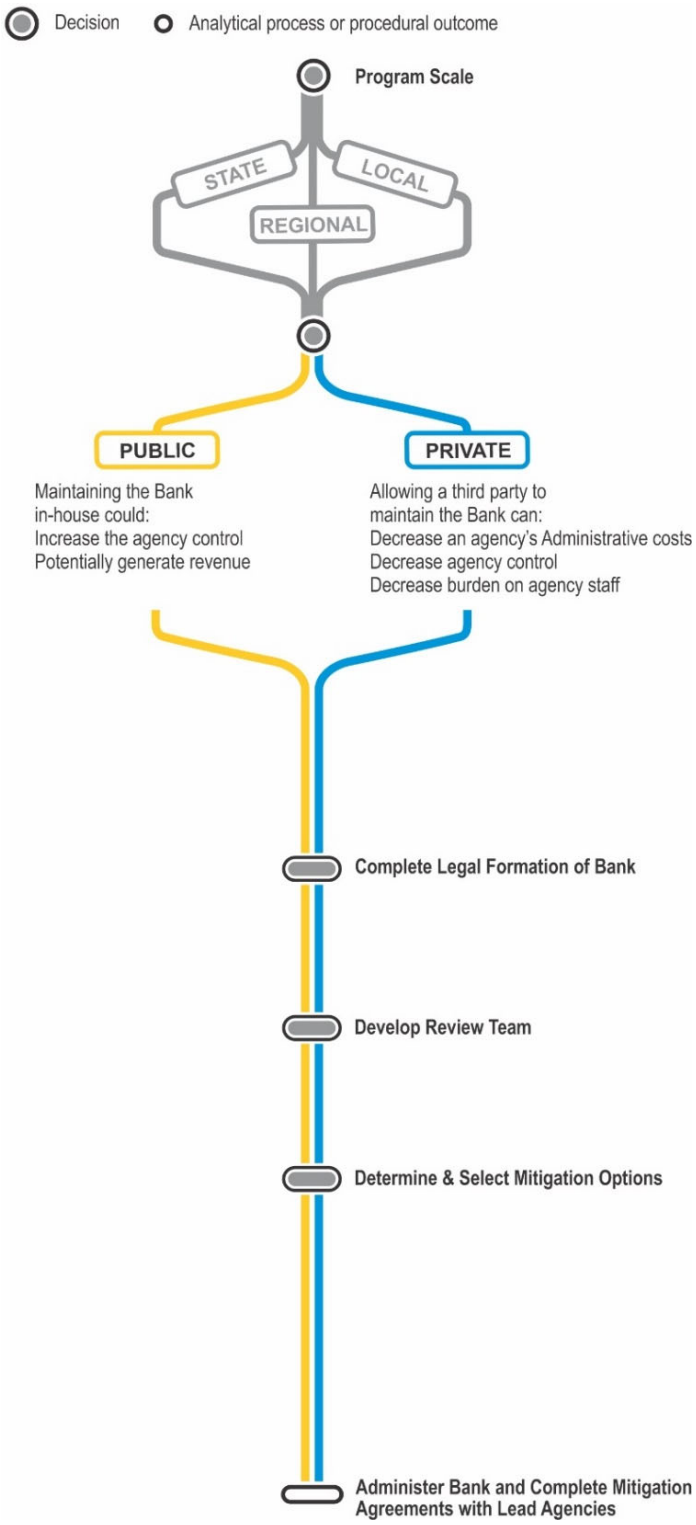

Figure 12: Procedural Flow Chart – VMT Bank

Source: VMT Mitigation Through Banks and Exchanges: Understanding New Mitigation Approaches. A White Paper by Fehr & Peers (January 2020).

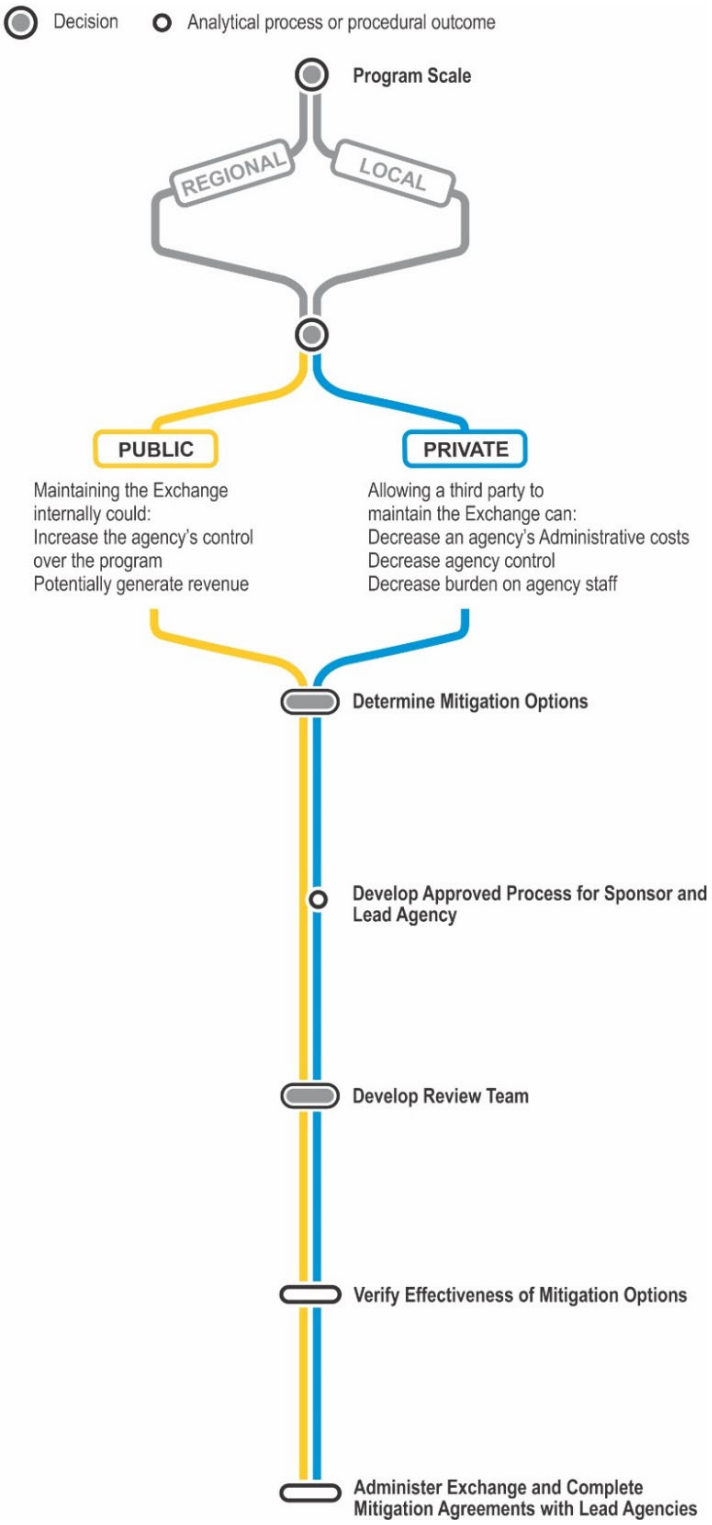

Figure 13: Procedural Flow Chart – VMT Exchange

Source: VMT Mitigation Through Banks and Exchanges: Understanding New Mitigation Approaches. A White Paper by Fehr & Peers (January 2020).

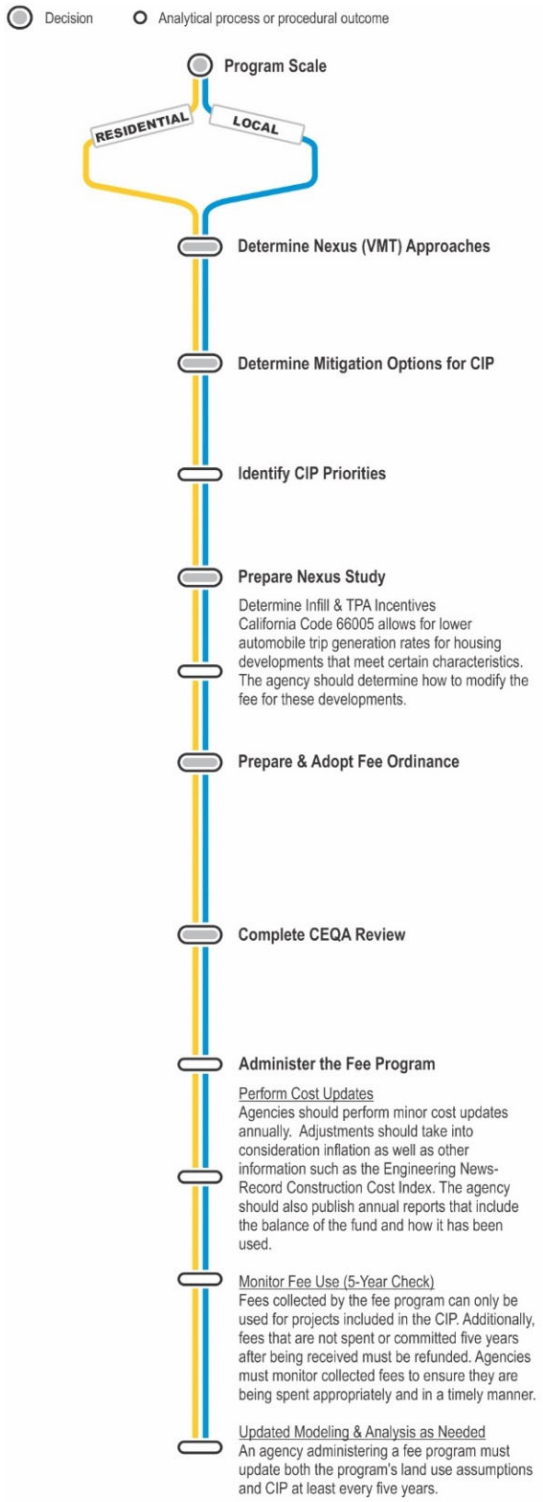

Figure 14: Procedural Flow Chart – VMT Impact Fee

Source: Understanding New Mitigation Approaches. A White Paper by Fehr & Peers (January 2020).

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Table F - Vehicle Miles Traveled Mitigation Measures for Land Development Projects

No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
1	T-1	Increase Residential Density	This measure accounts for the vehicle miles traveled (VMT) reduction achieved by a project that is designed with a higher density of dwelling units (DU) compared to the average residential density in the U.S. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing residential density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in GHG emissions. This measure is best quantified when applied to larger developments and developments where the density is somewhat similar to the surrounding area due to the underlying research being founded in data from the neighborhood level.	Urban, Suburban	Project/Site	This measure is most accurately quantified when applied to larger developments and/or developments where the density is somewhat similar to the surrounding neighborhood.	When paired with Measure T-2, Increase Job Density, the cumulative densification from these measures can result in a highly walkable and bikeable area, yielding increased co-benefits in VMT reductions, improved public health, and social equity.	Refer to California Air Pollution Control Officers Association (CAPCOA) report Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA Manual), Final Draft, December 2021, page 71.	Up to 30.0 percent project VMT in the study area
2	T-2	Increase Job Density	This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of jobs compared to the average job density in the U.S. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing job density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in GHG emissions.	Urban, suburban	Project/Site	This measure is most accurately quantified when applied to larger developments and/or developments where the density is somewhat similar to the surrounding neighborhood.	When paired with Measure T-1, Increase Residential Density, the cumulative densification from these measures can result in a highly walkable and bikeable area, yielding increased co-benefits in VMT reductions, improved public health, and social equity.	Refer to CAPCOA Manual, page 74.	Up to 30.0 percent project VMT in the study area
3	T-3	Provide Transit-Oriented Development	This measure would reduce project VMT in the study area relative to the same project sited in a non-transit-oriented development (TOD) location. TOD refers to projects built in compact, walkable areas that have easy access to public transit, ideally in a location with a mix of uses, including housing, retail offices, and community facilities. Project site residents, employees, and visitors would have easy access to high-quality public transit, thereby encouraging transit ridership and reducing the number of single-occupancy vehicle trips and associated GHG emissions.	Urban, suburban. Rural only if adjacent to commuter rail station with convenient rail service to a major employment center.	Project/Site	To qualify as a TOD, the development must be a residential or office project that is within a 10-minute walk (0.5 mile) of a high frequency transit station (either rail, or bus rapid transit with headways less than 15 minutes). Ideally, the distance should be no more than 0.25 to 0.3 of a mile but could be up to 0.5 mile if the walking route to station can be accessed by pedestrian-friendly routes. Users should confirm “unmitigated” or “baseline” VMT does not already account for reductions from transit proximity.	When building TOD, a best practice is to incorporate bike and pedestrian access into the larger network to increase the likelihood of transit use.	Refer to CAPCOA Manual, page 77.	Up to 31.0 percent project VMT in the study area
4	T-4	Integrate Affordable and Below Market Rate Housing	This measure requires below market rate (BMR) housing. BMR housing provides greater opportunity for lower income families to live closer to job centers and achieve a jobs/housing match near transit. It is also an important strategy to address the limited availability of affordable housing that might force residents to live far away from jobs or school, requiring longer commutes. The quantification method for this measure accounts for VMT reductions achieved for multifamily residential projects that are deed restricted or otherwise permanently dedicated as affordable housing.	Urban, suburban	Project/Site	Multifamily residential units must be permanently dedicated as affordable for lower income families. The California Department of Housing and Community Development (2021) defines lower-income as 80 percent of area median income or below, and affordable housing as costing 30 percent of gross household income or less.	Pair with Measure T-1, Increase Residential Density, and Measure T-2, Increase Job Density, to achieve greater population and employment diversity.	Refer to CAPCOA Manual, page 81.	Up to 28.6 percent project/site multifamily residential VMT
5	T-5	Implement Commute Trip Reduction Program (Voluntary)	This measure will implement a voluntary commute trip reduction (CTR) program with employers. CTR programs discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions. Voluntary implementation elements are described in this measure.	Urban, suburban	Project/Site	Voluntary CTR programs must include the following elements to apply the VMT reductions reported in literature. • Employer-provided services, infrastructure, and incentives for alternative modes such as ridesharing (Measure T-8), discounted transit (Measure T-9), bicycling (Measure T-10), vanpool (Measure T-11), and guaranteed ride home. • Information, coordination, and marketing for said services, infrastructure, and incentives (Measure T-7).	Other strategies may also be included as part of a voluntary CTR program, though they are not included in the VMT reductions reported by literature and thus are not incorporated in the VMT reductions for this measure. This program typically serves as a complement to the more effective workplace CTR measures such as pricing workplace parking (Measure T-12) or implementing employee parking “cash-out” (Measure T-13).	Refer to CAPCOA Manual, page 84.	Up to 4.0 percent project/site employee commute VMT

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Table F - Vehicle Miles Traveled Mitigation Measures for Land Development Projects

No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
6	T-6	Implement Commute Trip Reduction Program (Mandatory Implementation and Monitoring)	This measure will implement a mandatory CTR program with employers. CTR programs discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions.	Urban, suburban	Project/Site	The mandatory CTR program must include all other elements (i.e., Measures T-7 through T-11) described for the voluntary program (Measure T-5) plus include mandatory trip reduction requirements (including penalties for non-compliance) and regular monitoring and reporting to ensure the calculated VMT reduction matches the observed VMT reduction.	This program typically serves as a complement to the more effective workplace CTR measures, such as pricing workplace parking (Measure T-12) or implementing employee parking "cash-out" (Measure T-13).	Refer to CAPCOA Manual, page 87.	Up to 26.0 percent project/site employee commute VMT
7	T-7	Implement Commute Trip Reduction Marketing	This measure will implement a marketing strategy to promote the project site employer's CTR program. Information sharing and marketing promote and educate employees about their travel choices to the employment location beyond driving such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions.	Urban, suburban	Project/Site	The following features (or similar alternatives) of the marketing strategy are essential for effectiveness. • Onsite or online commuter information services. • Employee transportation coordinators. • Onsite or online transit pass sales. • Guaranteed ride home service.	This measure could be packaged with other commute trip reduction measures (Measures T-8 through T-13) as a comprehensive CTR program (Measure T-5 or T-6).	Refer to CAPCOA Manual, page 90.	Up to 4.0 percent project/site employee commute VMT
8	T-8	Provide Ridesharing Program	This measure will implement a ridesharing program and establish a permanent transportation management association with funding requirements for employers. Ridesharing encourages carpooled vehicle trips in place of single-occupied vehicle trips, thereby reducing the number of trips, VMT, and GHG emissions.	Urban, suburban	Project/Site	Ridesharing must be promoted through a multifaceted approach. Examples include the following. • Designating a certain percentage of desirable parking spaces for ridesharing vehicles. • Designating adequate passenger loading and unloading and waiting areas for ridesharing vehicles. • Providing an app or website for coordinating rides.	When providing a ridesharing program, a best practice is to establish funding by a non-revocable funding mechanism for employer-provided subsidies. In addition, encourage use of low-emission ridesharing vehicles (e.g., shared Uber Green). This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.	Refer to CAPCOA Manual, page 93.	Up to 8.0 percent project/site employee commute VMT
9	T-9	Implement Subsidized or Discounted Transit Program	This measure will provide subsidized or discounted, or free transit passes for employees and/or residents. Reducing the out-of-pocket cost for choosing transit improves the competitiveness of transit against driving, increasing the total number of transit trips and decreasing vehicle trips. This decrease in vehicle trips results in reduced VMT and thus a reduction in GHG emissions.	Urban, suburban	Project/Site	The project should be accessible either within 1 mile of high-quality transit service (rail or bus with headways of less than 15 minutes), 0.5 mile of local or less frequent transit service, or along a designated shuttle route providing last-mile connections to rail service. If a well-established bikeshare service (Measure T-22-A) is available, the site may be located up to 2 miles from a high-quality transit service. If more than one transit agency serves the site, subsidies should be provided that can be applied to each of the services available. If subsidies are applied for only one service, all variable inputs below should also pertain only to the service that is subsidized.	This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.	Refer to CAPCOA Manual, page 96.	Up to 5.5 percent from employee/resident vehicles accessing the site
10	T-10	Provide End-of-Trip Bicycle Facilities	This measure will install and maintain end-of-trip facilities for employee use. End-of-trip facilities include bike parking, bike lockers, showers, and personal lockers. The provision and maintenance of secure bike parking and related facilities encourages commuting by bicycle, thereby reducing VMT and GHG emissions.	Urban, suburban	Project/Site	End-of-trip facilities should be installed at a size proportional to the number of commuting bicyclists and regularly maintained.	Best practice is to include an onsite bicycle repair station and post signage on or near secure parking and personal lockers with information about how to reserve or obtain access to these amenities. This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.	Refer to CAPCOA Manual, page 101.	Up to 4.4 percent project/site employee commute VMT
11	T-11	Provide Employer-Sponsored Vanpool	This measure will implement an employer-sponsored vanpool service. Vanpooling is a flexible form of public transportation that provides groups of 5 to 15 people with a cost-effective and convenient rideshare option for commuting. The mode shift from long-distance, single-occupied vehicles to shared vehicles reduces overall commute VMT, thereby reducing GHG emissions.	Urban, suburban, rural	Project/Site	Vanpool programs are more appropriate for the building occupant or tenant (i.e., employer) to implement and monitor than the building owner or developer.	When implementing a vanpool service, best practice is to subsidize the cost for employees that have a similar origin and destination and provide priority parking for employees that vanpool. This measure could be paired with any combination of the other commute trip reduction strategies (Measures T-7 through T-13) for increased reductions.	Refer to CAPCOA Manual, page 105.	Up to 20.4 percent project/site employee commute VMT

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No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
12	T-12	Price Workplace Parking	This measure will price onsite parking at workplaces. Because free employee parking is a common benefit, charging employees to park onsite increases the cost of choosing to drive to work. This is expected to reduce single-occupancy vehicle commute trips, resulting in decreased VMT, thereby reducing associated GHG emissions.	Urban, suburban	Project/Site	Implementation may include the following. • Explicitly charging for employee parking. • Implementing above-market rate pricing. • Validating parking only for invited guests (or not providing parking validation at all). • Not providing employee parking and transportation allowances. In addition, this measure should include marketing and education regarding available alternatives to driving.	Best practice is to ensure that other transportation options are available, convenient, and have competitive travel times (i.e., transit service near the project site, shuttle service, or a complete active transportation network serving the site and surrounding community), and that there is not alternative free parking available nearby (such as on-street). This measure is substantially less effective in environments that do not have other modes available or where unrestricted street parking or other offsite parking is available nearby and has adequate capacity to accommodate project-related vehicle parking demand.	Refer to CAPCOA Manual, page 110.	Up to 20.0 percent project/site employee commute VMT
13	T-13	Implement Employee Parking Cash-Out	This measure will require project employers to offer employee parking cash-out. Cash-out is when employers provide employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to or greater than the cost of the parking space. This encourages employees to use other modes of travel instead of single occupancy vehicles. This mode shift results in people driving less and thereby reduces VMT and GHG emissions.	Urban, suburban	Project/Site	To prevent spill-over parking and continued use of single occupancy vehicles, residential parking in the surrounding area must be permitted, and public on-street parking must be market rate.	This measure could be paired with many other commute trip reduction strategies (Measures T-7 through T-11) for increased reductions.	Refer to CAPCOA Manual, page 114.	Up to 12.0 percent project/site employee commute VMT
14	T-14	Provide Electric Vehicle Charging Infrastructure	Install onsite electric vehicle chargers in an amount beyond what is required by the 2019 California Green Building Standards (CALGreen) at buildings with designated parking areas (e.g., commercial, educational, retail, multifamily). This will enable drivers of plug-in hybrid electric vehicles (PHEVs) to drive a larger share of miles in electric mode (eVMT), as opposed to gasoline-powered mode, thereby displacing GHG emissions from gasoline consumption with a lesser amount of indirect emissions from electricity. Most PHEVs owners charge their vehicles at home overnight. When making trips during the day, the vehicle will switch to gasoline mode if/when it reaches its maximum all-electric range.	Urban, suburban, rural	Project/Site	Parking at the chargers must be limited to electric vehicles.	In addition to increasing the percentage of electric miles for PHEVs, the increased availability of chargers from implementation of this measure could mitigate consumer "range anxiety" concerns and increase the adoption and use of battery electric vehicles (BEVs), but this potential effect is not included in the calculations as a conservative assumption. Expanded mitigation could include quantification of the effect of this measure on BEV use.	-	-
15	T-15	Limit Residential Parking Supply	This measure will reduce the total parking supply available at a residential project or site. Limiting the amount of parking available creates scarcity and adds additional time and inconvenience to trips made by private auto, thus disincentivizing driving as a mode of travel. Reducing the convenience of driving results in a shift to other modes and decreased VMT and thus a reduction in GHG emissions. Evidence of the effects of reduced parking supply is strongest for residential developments.	Urban, suburban	Project/Site	This measure is ineffective in locations where unrestricted street parking or other offsite parking is available nearby and has adequate capacity to accommodate project-related vehicle parking demand.	When limiting parking supply, a best practice is to do so at sites that are located near high quality alternative modes of travel (such as a rail station, frequent bus line, or in a higher density area with multiple walkable locations nearby). Limiting parking supply may also allow for more active uses on any given lot, which may support Measures T-1 and T-2 by allowing for higher density construction.	Refer to CAPCOA Manual, page 123.	Up to 13.7 percent from resident vehicles accessing the site
16	T-16	Unbundle Residential Parking Costs from Property Cost	This measure will unbundle, or separate, a residential project's parking costs from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost. On the assumption that parking costs are passed through to the vehicle owners/drivers utilizing the parking spaces, this measure results in decreased vehicle ownership and, therefore, a reduction in VMT and GHG emissions. Unbundling may not be available to all residential developments, depending on funding sources.	Urban, suburban	Project/Site	Parking costs must be passed through to the vehicle owners/drivers utilizing the parking spaces for this measure to result in decreased vehicle ownership.	Pair with Measure T-19-A or T-19-B to ensure that residents who eliminate their vehicle and shift to a bicycle can safely access the area's bikeway network.	Refer to CAPCOA Manual, page 127.	Up to 15.7 percent project VMT in the study area
17	T-17	Improve Street Connectivity	This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of vehicle intersections compared to the average intersection density in the U.S. Increased vehicle intersection density is a proxy for street connectivity improvements, which help to facilitate a greater number of shorter trips and thus a reduction in GHG emissions.	Urban, suburban	Plan/Community	Projects that increase intersection density would be building a new street network in a subdivision or retrofitting an existing street network to improve connectivity (e.g., converting cul-de-sacs or dead-end streets to grid streets).	Pair with Measure T-18, Provide Pedestrian Network Improvement, to best support use of the local pedestrian network.	Refer to CAPCOA Manual, page 131.	Up to 30.0 percent from vehicle travel in the plan/community

Table F - Vehicle Miles Traveled Mitigation Measures for Land Development Projects

No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
18	T-18	Provide Pedestrian Network Improvement	This measure will increase the sidewalk coverage to improve pedestrian access. Providing sidewalks and an enhanced pedestrian network encourages people to walk instead of drive. This mode shift results in a reduction in VMT and GHG emissions.	Urban, suburban, rural	Plan/Community	The GHG reduction of this measure is based on the VMT reduction associated with expansion of sidewalk coverage expansion, which includes not only building of new sidewalks but also improving degraded or substandard sidewalk (e.g., damaged from street tree roots). However, pedestrian network enhancements with non-quantifiable GHG reductions are encouraged to be implemented, as discussed under Expanded Mitigation Options.	When improving sidewalks, a best practice is to ensure they are contiguous and link externally with existing and planned pedestrian facilities. Barriers to pedestrian access and interconnectivity, such as walls, landscaping buffers, slopes, and unprotected crossings should be minimized. Other best practice features could include high-visibility crosswalks, pedestrian hybrid beacons, and other pedestrian signals, mid-block crossing walks, pedestrian refuge islands, speed tables, bulb-outs (curb extensions), curb ramps, signage, pavement markings, pedestrian-only connections and districts, landscaping, and other improvements to pedestrian safety (see Measure T-35, Provide Traffic Calming Measures).	Refer to CAPCOA Manual, page 134.	Up to 6.4 percent from vehicle travel in the plan/community
19	T-19-A	Construct or Improve Bike Facility	This measure will construct or improve a single bicycle lane facility (only Class I, II, or IV) that connects to a larger existing bikeway network. Providing bicycle infrastructure helps to improve biking conditions within an area. This encourages a mode shift on the roadway parallel to the bicycle facility from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. When constructing or improving a bicycle facility, a best practice is to consider local or state bike lane width standards. A variation of this measure is provided as T-19-B, Construct or Improve Bike Boulevard.	Urban, suburban	Plan/Community. This measure reduces VMT on the roadway segment parallel to the bicycle facility (i.e., the corridor). An adjustment factor is included in the formula to scale the VMT reduction from the corridor level to the plan/community level.	The bicycle lane facility must be either Class I, II, or IV. Class I bike paths are physically separated from motor vehicle traffic. Class IV bikeways are protected on-street bikeways, also called cycle tracks. Class II bike lanes are striped bicycle lanes that provide exclusive use to bicycles on a roadway.	Implement alongside Measures T-22-A, T-22-B, and/or T-22-C to ensure that micromobility users can ride safely along bicycle lane facilities and not have to ride along pedestrian infrastructure, which is a risk to pedestrian safety.	Refer to CAPCOA Manual, page 138.	Up to 0.8 percent from vehicles on parallel roadways
20	T-19-B	Construct or Improve Bike Boulevard	Construct or improve a single bicycle boulevard that connects to a larger existing bikeway network. Bicycle boulevards are a designation within Class III Bikeway that create safe, low-stress connections for people biking and walking on streets. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. A variation of this measure is provided as T-19-A, Construct or Improve Bike Facility, which is for Class I, II, or IV bicycle infrastructure.	Urban, suburban	Plan/Community. This measure reduces VMT on the roadway segment parallel to the bicycle facility (i.e., the corridor). An adjustment factor is included in the formula to scale the VMT reduction from the corridor level to the plan/community level.	The following roadway conditions must be met. • Functional classification: local and collector if there is no more than a single general-purpose travel lane in each direction. • Design speed: <= 25 miles per hour. • Design volume <= 5,000 average daily traffic. • Treatments at major intersections: both directions have traffic signals (or an effective control device that prioritizes pedestrian and bicycle access such as rapid flashing beacons, pedestrian hybrid beacons, high-intensity activated crosswalks, TOUCANs), bike route signs, “sharrowed” roadway markings, and pedestrian crosswalks.	Construct boulevards with forced turns for vehicles every few blocks to minimize through traffic while ensuring that speed and volume metrics are met. Implement alongside Measures T-22-A, T-22-B, and/or T-22-C to ensure that micromobility users can ride safely along bicycle lane facilities and not pedestrian infrastructure, which is a risk to pedestrian safety.	Refer to CAPCOA Manual, page 143.	Up to 0.2 percent from vehicles on roadways
22	T-20	Expand Bikeway Network	This measure will increase the length of a city or community bikeway network. A bicycle network is an interconnected system of bike lanes, bike paths, bike routes, and cycle tracks. Providing bicycle infrastructure with markings and signage on appropriately sized roads with vehicle traffic traveling at safe speeds helps to improve biking conditions (e.g., safety and convenience). In addition, expanded bikeway networks can increase access to and from transit hubs, thereby expanding the “catchment area” of the transit stop or station and increasing ridership. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. When expanding a bicycle network, a best practice is to consider bike lane width standards from local agencies, state agencies, or the National Association of City Transportation Officials’ Urban Bikeway Design Guide.	Urban, suburban	Plan/Community	The bikeway network must consist of either Class I, II, or IV infrastructure.	As networks expand, ensure safe, secure, and weather-protected bicycle parking facilities at origins and destinations. Also, implement alongside T-22-A, T-22-B, and/or T-22-C to ensure that micromobility options can ride safely along bicycle lane facilities and not have to ride along pedestrian infrastructure, which is a risk to pedestrian safety.	Refer to CAPCOA Manual, page 147.	Up to 0.5 percent from vehicle travel in the plan/community
23	T-21-A	Implement Conventional Carshare Program	This measure will increase carshare access in the user’s community by deploying conventional carshare vehicles. Carsharing offers people convenient access to a vehicle for personal or commuting purposes. This helps encourage transportation alternatives and reduces vehicle ownership, thereby avoiding VMT and associated GHG emissions. A variation of this measure, electric carsharing, is described in Measure T-21-B, Implement Electric Carshare Program.	Urban, suburban	Plan/Community	The GHG mitigation potential is based, in part, on literature analyzing one-way carsharing service with a free-floating operational model. This measure should be applied with caution if using a different form of carsharing (e.g., roundtrip, peer-to-peer, fractional).	When implementing a carshare program, best practice is to discount carshare membership and provide priority parking for carshare vehicles to encourage use of the service.	Refer to CAPCOA Manual, page 151.	Up to 0.15 percent from vehicle travel in the plan/community

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Table F - Vehicle Miles Traveled Mitigation Measures for Land Development Projects

No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
24	T-21-B	Implement Electric Carshare Program	This measure will increase carshare access in the user's community by deploying electric carshare vehicles. Carsharing offers people convenient access to a vehicle for personal or commuting purposes. This helps encourage transportation alternatives and reduces vehicle ownership, thereby avoiding VMT and associated GHG emissions. This also encourages a mode shift from internal combustion engine vehicles to electric vehicles, displacing the emissions-intensive fossil fuel energy with less emissions-intensive electricity. Electric carshare vehicles require more staffing support compared to conventional carshare programs for shuttling electric vehicles to and from charging points. A variation of this measure, conventional carsharing, is described in Measure T-21-A, Implement Conventional Carshare Program.	Urban, suburban	Plan/Community	The GHG mitigation potential is based, in part, on literature analyzing one-way carsharing service with a free-floating operational model. This measure should be applied with caution if using a different form of carsharing (e.g., roundtrip, peer-to-peer, fractional).	When implementing a carshare program, best practice is to discount carshare membership and provide priority parking for carshare vehicles to encourage use of the service.	Refer to CAPCOA Manual, page 158.	Up to 0.18 percent GHG reduction from vehicle travel in the plan/community. Please refer to VMT reduction formula on CAPCOA Manual, page 158.
25	T-22-A	Implement Pedal (Non-Electric) Bikeshare Program	This measure will establish a bikeshare program. Bikeshare programs provide users with on-demand access to bikes for short-term rentals. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. Variations of this measure are described in Measure T-22-B, Implement Electric Bikeshare Program, and Measure T-22-C, Implement Scootershare Program.	Urban, suburban	Plan/Community	The GHG mitigation potential is based, in part, on literature analyzing docked (i.e., station-based) bikeshare programs. This measure should be applied with caution if using dockless (free-floating) bikeshare.	Best practice is to discount bikeshare membership and dedicate bikeshare parking to encourage use of the service. Also consider including space on the vehicle to store personal items while traveling, such as a basket.	Refer to CAPCOA Manual, page 160.	Up to 0.02 percent from vehicle travel in the plan/community
26	T-22-B	Implement Electric Bikeshare Program	This measure will establish an electric bikeshare program. Electric bikeshare programs provide users with on-demand access to electric pedal assist bikes for short-term rentals. This encourages a mode shift from vehicles to electric bicycles, displacing VMT and reducing GHG emissions. Variations of this measure are described in Measure T-22-A, Implement Pedal (Non-Electric) Bikeshare Program, and Measure T-22-C, Implement Scootershare Program.	Urban, suburban	Plan/Community	The GHG mitigation potential is based, in part, on literature analyzing docked (i.e., station-based) bikeshare programs. This measure should be applied with caution if using dockless (free-floating) bikeshare.	Best practice is to discount electric bikeshare membership and dedicate electric bikeshare parking to encourage use of the service. Consider also including space on the vehicle to store personal items while traveling, such as a basket.	Refer to CAPCOA Manual, page 164.	Up to 0.06 percent from vehicle travel in the plan/community. This quantification methodology does not account for the miles traveled from vehicle travel of program employees picking up and dropping off bikes.
27	T-22-C	Implement Scootershare Program	This measure will establish a scootershare program. Scootershare programs provide users with on-demand access to electric scooters for short-term rentals. This encourages a mode shift from vehicles to scooters, displacing VMT and thus reducing GHG emissions. Variations of this measure are described in Measure T-22-A, Implement Pedal (Non-Electric) Bikeshare Program, and Measure T-22-B, Implement Electric Bikeshare Program.	Urban, suburban	Plan/Community	The GHG mitigation potential is based, in part, on literature analyzing docked (i.e., station-based) bikeshare programs. This measure should be applied with caution given the likely higher popularity of scootershare compared to bikeshare.	Best practice is to discount scootershare membership and dedicate scootershare parking to encourage use of the service. Consider also including space on the vehicle to store personal items while traveling, such as a basket.	Refer to CAPCOA Manual, page 168.	Up to 0.07 percent from vehicle travel in the plan/community. This quantification methodology does not account for the miles traveled from vehicle travel of program employees picking up and dropping off scooters.
28	T-23	Provide Community-Based Travel Planning	This measure will target residences in the plan/community with community-based travel planning (CBTP). CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles, thereby reducing household VMT and associated GHG emissions.	Urban, suburban	Plan/Community	CBTP involves teams of trained travel advisors visiting all households within a targeted geographic area, having tailored conversations about residents' travel needs, and educating residents about the various transportation options available to them. Due to the personalized outreach method, communities are typically targeted in phases.	Pair with any of the Measures from T-17 through T-22-C to ensure that residents that are targeted by CBTP who want to use alternative transportation have the infrastructure and technology to do so.	Refer to CAPCOA Manual, page 172.	Up to 2.3 percent from vehicle travel in the plan/community
29	T-24	Implement Market Price Public Parking (On-Street)	This measure will price all on-street parking in a given community, with a focus on parking near central business districts, employment centers, and retail centers. Increasing the cost of parking increases the total cost of driving to a location, incentivizing shifts to other modes and thus decreasing total VMT to and from the priced areas. This VMT reduction results in a corresponding reduction in GHG emissions.	Urban, suburban	Plan/Community	When pricing on-street parking, best practice is to allow for dynamic adjustment of prices to ensure approximately 85 percent occupancy, which helps prevent induced VMT due to circling behaviors as individuals search for a vacant parking space. In addition, this method should primarily be implemented in areas with available alternatives to driving, such as transit availability within 0.5. mile or areas of high residential density nearby (allowing for increased walking/biking). If the measure is implemented in a small area, residential parking permit programs should be considered to prevent parking intrusion on nearby streets in residential areas without priced parking.	Pricing on-street parking also helps support individual projects with priced onsite parking by removing potential alternative parking locations.	Refer to CAPCOA Manual, page 175.	Up to 30.0 percent from vehicle travel in the plan/community

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Table F - Vehicle Miles Traveled Mitigation Measures for Land Development Projects

No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
30	T-25	Extend Transit Network Coverage or Hours	This measure will expand the local transit network by either adding or modifying existing transit service or extending the operation hours to enhance the service near the project site. Starting services earlier in the morning and/or extending services to late-night hours can accommodate the commuting times of alternative-shift workers. This will encourage the use of transit and therefore reduce VMT and associated GHG emissions.	Urban, suburban	Plan/Community	There are two primary means of expanding the transit network: by increasing the frequency of service, thereby reducing average wait times and increasing convenience, or by extending service to cover new areas and times.	This measure is focused on providing additional transit network coverage, with no changes to transit frequency. This measure can be paired with Measure T-26, Increase Transit Service Frequency, which is focused on increasing transit service frequency, for increased reductions.	Refer to CAPCOA Manual, page 179.	Up to 4.6 percent from vehicle travel in the plan/community
31	T-26	Increase Transit Service Frequency	This measure will increase transit frequency on one or more transit lines serving the plan/community. Increased transit frequency reduces waiting and overall travel times, which improves the user experience and increases the attractiveness of transit service. This results in a mode shift from single occupancy vehicles to transit, which reduces VMT and associated GHG emissions.	Urban, suburban	Plan/Community	Refer to measure description.	This measure is focused on providing increased transit frequency, with no changes to transit network coverage. This measure can be paired with Measure T-25, Extend Transit Network Coverage or Hours, which is focused on increasing transit network coverage, for increased reductions.	Refer to CAPCOA Manual, page 185.	Up to 11.3 percent GHG reduction from vehicle travel in the plan/community. Please refer to VMT reduction formula on CAPCOA Manual, page 185.
32	T-27	Implement Transit-Supportive Roadway Treatments	This measure will implement transit-supportive treatments on the transit routes serving the plan/community. Transit-supportive treatments incorporate a mix of roadway infrastructure improvements and/or traffic signal modifications to improve transit travel times and reliability. This results in a mode shift from single occupancy vehicles to transit, which reduces VMT and the associated GHG emissions.	Urban, suburban	Plan/Community	Treatments can include transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, and dedicated bus lanes.	This measure could be paired with other Transit subsector strategies (Measure T-25 and Measure T-29) for increased reductions.	Refer to CAPCOA Manual, page 189.	Up to 0.6 percent from vehicle travel in the plan/community
33	T-28	Provide Bus Rapid Transit	This measure will convert an existing bus route to a bus rapid transit (BRT) system. BRT includes the following additional components, compared to traditional bus service: exclusive right-of-way (e.g., busways, queue jumping lanes) at congested intersections, increased limited-stop service (e.g., express service), intelligent transportation technology (e.g., transit signal priority, automatic vehicle location systems), advanced technology vehicles (e.g., articulated buses, low-floor buses), enhanced station design, efficient fare-payment smart cards or smartphone apps, branding of the system, and use of vehicle guidance systems. BRT can increase the transit mode share in a community due to improved travel times, service frequencies, and the unique components of the BRT system. This mode shift reduces VMT and the associated GHG emissions.	Urban, suburban	Plan/Community	The measure quantification methodology accounts for the increase in ridership from (1) improved travel times from transit signal prioritization, (2) increased service frequency, and (3) the unique ridership increase associated with a full-featured BRT service operating on a fully segregated running way with specialized (or stylized) vehicles, attractive stations, and efficient fare collection practices. To take credit for the estimated emissions reduction, the user should implement, at minimum, these components.	This measure could be paired with Measure T-25, Extend Transit Network Coverage or Hours, and Measure T-29, Reduce Transit Fares, for increased reductions.	Refer to CAPCOA Manual, page 193.	Up to 13.8 percent from vehicle travel in the plan/community. Please refer to VMT reduction formula on CAPCOA Manual, page 195.
34	T-29	Reduce Transit Fares	This measure will reduce transit fares on the transit lines serving the plan/community. A reduction in transit fares creates incentives to shift travel to transit from single-occupancy vehicles and other traveling modes, which reduces VMT and associated GHG emissions. This measure differs from Measure T-8, Implement Subsidized or Discounted Transit Program, which can be offered through employer-based benefits programs in which the employer fully or partially pays the employee's cost of transit.	Urban, suburban	Plan/Community	Transit fare reductions can be implemented systemwide or in specific fare-free or reduced-fare zones.	This measure could be paired with other Transit subsector strategies (Measure T-25, Extend Transit Network Coverage or Hours, and Measure T-26, Increase Transit Service Frequency) for increased reductions.	Refer to CAPCOA Manual, page 200.	Up to 1.2 percent from vehicle travel in the plan/community

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No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
35	T-30	Use Cleaner-Fuel Vehicles	This measure requires use of cleaner-fuel vehicles in lieu of similar vehicles powered by gasoline or diesel fuel. Cleaner-fuel vehicles addressed in this measure include electric vehicles, natural gas and propane vehicles, and vehicles powered by biofuels such as composite diesel (blend of renewable diesel, biodiesel, and conventional fossil diesel), ethanol, and renewable natural gas. The full GHG emissions impact of cleaner fuels depends on the emissions from the vehicle's tailpipe as well as the emissions associated with production of the fuel (sometimes termed "upstream" emissions). For example, tailpipe GHG emissions from renewable natural gas are identical to tailpipe GHG emissions from conventional natural gas; the GHG benefits of renewable natural gas come from the fact that it is produced from biomass. Similarly, BEVs have zero tailpipe emissions, but properly accounting for their GHG impacts requires quantifying the emissions associated with the electricity generation needed to charge the vehicle's batteries.	Not-applicable	Project/Site or Plan/Community	-	If using electric vehicles, pair with Measure T-14 to ensure that electric vehicles have sufficient access to charging infrastructure.	-	-
36	T-31-A	Locate Project in Area with High Destination Accessibility	The measure requires development in an area with high accessibility to destinations. Destination accessibility is measured in terms of the number of jobs or other attractions (e.g., schools, supermarkets, and health care services) that are reachable within a given travel time or travel distance, and tends to be highest at central locations and lowest at peripheral ones. When destinations are nearby, the travel time between them is less, thus increasing the potential for people to walk and bike to those destinations and, therefore, reducing the VMT and associated GHG emissions. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design.	Urban, suburban	Project/Site	-	This is a variation of measure T-31-B.	-	-
37	T-31-B	Improve Destination Accessibility in Undeserved Areas	This measure accounts for the VMT reduction that would be achieved by constructing job centers or other attractions (e.g., schools, supermarkets, and health care services) for residents in underserved areas (e.g., food deserts). When destinations are nearby, the travel time between them is less, thus increasing the potential for people to walk and bike to those destinations, reducing VMT and associated GHG emissions. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design.	Urban, suburban	Plan/Community	-	This is a variation of measure T-31-A.	-	-
38	T-32	Orient Project Toward Transit, Bicycle, or Pedestrian Facility	This measure requires projects to minimize setback distance between the project and planned or existing transit, bicycle, or pedestrian corridors. A project that is designed around an existing or planned transit, bicycle, or pedestrian corridor encourages sustainable mode use. As an implementation consideration, projects should consider accessibility by people of all functional abilities and incorporate design principles such as Universal Design.	Urban, suburban, rural	Project/Site	-	-	-	-
39	T-33	Locate Project near Bike Path/Bike Lane	This measure requires projects to be located within 0.5-mile bicycling distance to an existing Class I or IV path or Class II bike lane. A project that is designed around an existing or planned bicycle facility encourages sustainable mode use. The project design should include a comparable network that connects the project uses to the existing off-site facilities that connect to work/retail destinations. As an implementation consideration, projects should provide sufficient and convenient bicycle parking and long-term storage, ideally near the bike lane itself, for residents, employees, and visitors, and a bicycle repair station with tools and equipment.	Urban, suburban	Project/Site	-	This measure can be implemented with Measure T-9.	-	-

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Table F - Vehicle Miles Traveled Mitigation Measures for Land Development Projects

No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
40	T-34	Provide Bike Parking	This measure requires projects provide short-term and long-term bicycle parking facilities to meet peak season maximum demand. Parking can be provided in designated areas or added within rights-of-way, including by replacing parking spaces with bike parking corrals. Ensure that bike parking can be accessed by all, not just project employees or residents.	Urban, suburban, rural	Project/Site or Plan/Community	-	-	-	-
41	T-35	Provide Traffic Calming Measures	This measure requires projects to include pedestrian/bicycle safety and traffic calming measures above jurisdictional requirements. Roadways should also be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others. Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift will result in a decrease in vehicle miles traveled. Traffic calming also promotes active transportation, which improves physical health.	Urban, suburban, rural	Plan/Community	-	-	-	-
42	T-36	Create Urban Non-Motorized Zones	The measure requires projects to convert a percentage of its roadway miles to transit malls, linear parks, or other non-motorized zones. These features encourage non-motorized travel and thus a reduction in vehicle miles traveled. This measure is only applicable to projects located in urban environments. Consider access issues for paratransit users and those with mobility impairments.	Urban	Plan/Community	-	-	-	-
43	T-37	Dedicate Land for Bike Trails	This measure requires projects to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan. Existing desire paths can make good locations, as it represents a community-identified transportation need.	Urban, suburban, rural	Plan/Community	-	-	-	-
44	T-38	Provide First and Last Mile TNC Incentives	This measure requires a first-last mile partnership between a municipality/transit agency and a transportation network company (TNC) for subsidized, shared TNC rides to or from the local transit station within a specific geographic area. This measure encourages a shift to transit mode for longer trips. Consider providing inclusive mechanisms so people without bank accounts, credit cards, or smart phones can access the incentives.	Urban, suburban, rural (only if the project is adjacent to a commuter rail station with convenient rail service to a major employment center)	Plan/Community	-	-	-	-
45	T-39	Implement Preferential Parking Permit Program	This measure requires projects provide preferential parking in terms of free or reduced parking fees, priority parking, or reserved parking in convenient locations (such as near public transportation or building entrances) for commuters who carpool, vanpool, ride-share or use sustainably fueled vehicles. Projects should also provide wide parking spaces to accommodate vanpool vehicles. Commercial preferential parking can accommodate workers who work non-standard hours by providing opportunities to participate. Residential preferential parking can consider an equitable distribution of permits, giving priority to owners of sustainably fueled vehicles.	Urban, suburban	Project/Site	-	-	-	-

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No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
46	T-40	Implement School Bus Program	This measure will provide school bus service transporting students to a school project. A school bus service can reduce the number of private vehicle trips to drop-off or pick-up students, thereby reducing VMT and associated GHG emissions, as well as onsite air pollution emissions, especially if the bus is zero emissions. Best practices include concentrating service for students who live further away from schools, providing service both before and after school, and encouraging parents to utilize the service. This measure is more effective at schools that draw students from a larger enrollment area, such as high schools or private schools.	Urban, suburban, rural	Project/Site	-	-	-	-
47	T-41	Implement a School Pool Program	This measure requires projects create a ridesharing program for school children. Most school districts provide bussing services to public schools only. School pool helps match parents to transport students to private schools, or to schools where students cannot walk or bike but do not meet the requirements for bussing. A school pool program can help reduce onsite air pollutant emissions at the school by reducing private vehicle trips, especially if the pool vehicle is zero emissions.	Urban, suburban, rural	Project/Site	-	-	-	-
48	T-42	Implement Telecommute and/or Alternative Work Schedule Program	This measure requires projects to permit employee telecommuting and/or alternative work schedules and monitor employee involvement to ensure forecasted participation matches observed participation. While this measure certainly reduces commute-related VMT, recent research has shown that total VMT from telecommuters can exceed VMT from non-telecommuters. In addition, telecommuting affects commercial and residential electricity use, complicating the calculation of the net effect and attribution of emissions. More specifically, an office with fewer employees could result in a decrease in the project's energy used to operate equipment and provide space heating and air conditioning. Conversely, an increase in telecommuters using their private homes as workspaces could result in a residential increase in energy for those same end uses and appliances. While this measure is currently not quantified and, according to some studies, could result in total VMT increases and other disbenefits, it is recommended that users review the most recent literature at the time of their project initiation to see if new findings more conclusively support a quantifiable emissions reduction.	Urban, suburban, rural	Project/Site	-	-	-	-
49	T-43	Provide Real-Time Transit Information	This measure requires projects provide real-time bus/train/ferry arrival time, travel time, alternative routings, or other transit information via electronic message signs, dedicated monitor or interactive electronic displays, websites, or mobile apps. This makes transit service more convenient and may result in a mode shift from auto to transit, which reduces VMT.	Urban, suburban, rural	Plan/Community	-	-	-	-

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No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
50	T-44	Provide Shuttles (Gas or Electric)	This measure will provide local shuttle service through coordination with the local transit operator or private contractor. The shuttles will provide service to and from commercial centers to nearby transit centers to help with first and last mile connectivity, thereby incentivizing a shift from private vehicles to transit, reducing associated GHG emissions. Electric shuttle vehicles provide a marginally more effective reduction to GHG emissions compared to gas- or diesel-fueled shuttles due to their use of less emissions-intensive electric power. Shuttles that serve only the project residents and/or employees may be seen as increasing gentrification and exclusionary. Consider allowing all people to use the shuttle, regardless of status. Note that this measure can also be implemented at the Project/Site scale by a large employer as part of a Trip Reduction Program.	Urban, suburban	Project/Site	-	-	-	-
51	T-45	Provide On-Demand Microtransit	This measure will provide small-scale, on-demand public transit services that can offer fixed routes and schedules or flexible routes and on-demand scheduling (e.g., Metro Micro) through coordination with the local transit operator or private contractor. Microtransit aims to offer shorter wait times and improved reliability compared to the bus and rail system to further incentivize alternative transportation modes that are less emissions-intensive than private vehicle trips. On-demand rides can be booked using smartphone applications or call centers. Note that this measure may also be applicable at the Project/Site scale for a large employer (e.g., Google's Via2G pilot) as part of a Trip Reduction Program.	Urban, suburban	Project/Site or Plan/Community	-	-	-	-
52	T-46	Improve Transit Access, Safety, and Comfort	This measure requires projects improve transit access and safety through sidewalk/crosswalk safety enhancements, bus shelter improvements, improved lighting, and other features. Work with the community to determine barriers to use, most desired improvements, and other access challenges.	Urban, suburban, rural (only if the project is adjacent to a commuter rail station with convenient rail service to a major employment center, or if there is available transit and the project is close to jobs/services)	Plan/Community	-	-	-	-
52	T-47	Provide Bike Parking Near Transit	This measure requires the project to provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points where there are commuter or rapid bus lines. Include locations for shared micromobility devices as well as higher-security parking for personal bicycles.	Urban, suburban	Plan/Community	-	-	-	-
53	T-48	Implement Area or Cordon Pricing	This measure requires projects implement a cordon pricing scheme. The pricing scheme will set a cordon (boundary) around a specified area to charge a toll to enter the area by vehicle. The cordon location is usually the boundary of a central business district or urban center but could also apply to substantial development projects with limited points of access. The toll price can be based on a fixed schedule or be dynamic, responding to real-time congestion levels. It is critical to have an existing, high quality transit infrastructure for the implementation of this strategy to reach a significant level of effectiveness. The pricing signals will only cause mode shifts if alternative modes of travel are available and reliable. This measure should provide an exception for low-income residents or workers within the pricing zone.	Urban	Plan/Community	-	-	-	-

LSA

Table F - Vehicle Miles Traveled Mitigation Measures for Land Development Projects

No.	CAPCOA Mitigation Measure No.	Mitigation Measure	Measure Description	Locational Context	Scale of Application	Implementation Requirements	Expanded Mitigation Options	Formula	VMT Reduction
54	T-49	Replace Traffic Controls with Roundabout	This measure requires projects install a roundabout as a traffic control device to smooth traffic flow, reduce idling, eliminate bottlenecks, and manage speed. In some cases, roundabouts can improve traffic flow and reduce emissions. The emission reduction depends heavily on what the roundabout is compared to (e.g., uncontrolled intersection, stop sign, traffic signal). Design roundabout so cyclists have the option to join traffic or bypass the roundabout with an adjacent path.	Urban, suburban, rural	Plan/Community	-	-	-	-
55	T-50	Required Project Contributions to Transportation Infrastructure Improvement	This measure requires projects contribute to traffic-flow improvements or other multi-modal infrastructure projects that reduce emissions and are not considered as substantially growth inducing. The local transportation agency should be consulted for specific needs. Larger projects may be required to contribute a proportionate share to the development and/or continuation of a regional transit system. Contributions may consist of dedicated right-of-way, capital improvements, or easements. Ensure the jurisdictional fee system does not disadvantage infill projects over greenfield projects.	Urban, suburban, rural	Plan/Community	-	-	-	-
56	T-51	Install Park-and-Ride Lots	This measure requires projects install park-and-ride lots near transit stops and high occupancy vehicle lanes. Park-and-ride lots also facilitate car- and vanpooling. Parking lots can also incorporate cool pavements, tree canopy, or solar photovoltaic shade canopies to reduce the urban heat island effect as well as evaporative emissions from parked vehicles and dedicated electric vehicle parking spots and/or charging infrastructure.	Suburban, rural	Plan/Community	-	-	-	-
57	T-52	Designate Zero Emissions Delivery Zones	This measure requires the municipality to designate certain curbside locations as commercial loading zones exclusively available for zero-emission commercial delivery vehicles. Doing so replaces tailpipe diesel emissions from last-mile delivery vehicles as well as heavy duty drayage trucks moving goods with less emissions-intensive electric vehicles and potentially micromobility for food and parcel delivery. Locations should be prioritized based on land use density and existing exposure from air pollution.	Urban	Plan/Community	-	-	-	-
58	T-53	Electrify Loading Docks	This measure will require that Transport Refrigeration Units and auxiliary power units (APUs) be plugged into the electric grid at the loading dock instead of running on diesel. The indirect GHG emission from electricity generation can partially offset the emissions reduction from fuel reductions. Electrifying loading docks can reduce exposure to air pollutants for workers and drivers.	Urban, suburban, rural	Project/Site	-	-	-	-
59	T-54	Install Hydrogen Fueling Infrastructure	The measure requires projects to implement accessible hydrogen fuel cell fueling infrastructure. Drivers of fuel cell electric vehicles (FCEV), from individual passenger vehicles to haul truck fleets, will be able to refuel using this infrastructure. The expansion of hydrogen fueling locations indirectly supports the uptake of FCEV in place of the typical internal combustion engine vehicle fueled by carbon-emitting gasoline and diesel.	-	Project/Site or Plan/Community	-	-	-	-
								-	

Source: *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity,* Final Draft, by the California Air Pollution Control Officers Association, December 2021.

APPENDIX A:

MCAG TRAVEL DEMAND MODELING SUPPORT SERVICES - SB 743 COORDINATION

FEHR PEERS

Memorandum

Date: October 21, 2022

To: Natalia Austin, MCAG

From: Mike Wallace, Fehr & Peers

CC: Elizabeth Forte and Blake Dunford, MCAG
Ambarish Mukherjee and Ravi Palakurthy, LSA

Subject: MCAG Travel Demand Modeling Support Services (20220727NA)
Task Order 1 – SB 743 Coordination

LA22-3394

This memo summarizes the review performed by Fehr & Peers of the existing travel behavior data and travel model outputs, SB 743 summary data provided by LSA, and recommendations on use of the model for SB 743 application. The review focused on the internalization for Los Banos, the VMT per service population compared to the VMT per person and VMT per employee, and trip distances for trips beyond the model boundary.

Highlights

- Location based services (LBS) data summarized from the StreetLight Data InSight platform were obtained to represent the observed travel patterns in 2019 and 2022.
- Los Banos internal capture in the model (72% in the base year and 76% in the future years) is consistent with the observed data from StreetLight Data (73% in 2019 and 63% in 2022).
- Based on the model and observed data, no changes to the model for Los Banos are recommended.
- Based on the data available, the travel model representation of external travel, and the project schedule, it is recommended that the CHTS data currently being used for external travel continue to be used for this round of target setting. Updates to the model and the data are recommended for the future.
- With the model land use inputs being used in the SB 743 VMT screening, the VMT per service population does not fully reflect the people generating activity and is not recommended for screening. This is especially true for land uses such as hospitals and hotels where visitor population is not in the service population but they generate a

substantial amount of the vehicle travel. Instead, it is recommended that unique uses perform analysis outside of the travel demand model screening framework.

Observed Travel Behavior Details

This section summarizes the travel model and observed data for daily vehicle trips associated with Los Banos. For consistency with the travel model, daily weekday vehicle trips with at least one trip end within Los Banos were obtained from StreetLight Data InSight platform and were summarized at the Census Block Group (CBG) level for 2019 and 2022 to minimize the impact of COVID-19 on travel. The CBG data outside of Los Banos were aggregated to city and county level, with the focus being on trips within Los Banos, within Merced County excluding Los Banos, and trip outside of Merced County. The travel model data for daily vehicle trips were summarized at the same level of geography.

As shown in Table 1, the trips within Los Banos range between 72% and 76% for the model scenarios and 73% and 63% for the StreetLight Data.

Table 1: Summary of Daily Vehicle Travel for Los Banos

Trips between Los Banos	Model				Observed Data	
	2015	2020	2035	2046	2019	2022
Los Banos	72%	76%	76%	76%	73%	63%
Merced County	17%	19%	19%	20%	18%	26%
Outside Merced County	10%	5%	5%	5%	9%	11%

External Travel

Currently the model calculates the travel external to the county by trip purpose and aggregates the trips for traffic assignment. Similarly, the average travel distance at the gateways that reflects travel beyond the county is an estimated total distance for all trips with one trip within the county. To reflect the total distance of travel by purpose for use in SB 743 target setting, screening, and project evaluation, LSA is using the California Household Travel Survey (CHTS). Given the model functionality and other data sources being updated next year, this method will be documented and revised in the future as needed.

VMT per Service Population

The model trip generation and travel activity is based on residential units and non-residential area, with a factor that calculates the persons per household and employees per area based on

the MCAG land use allocations used in the RTP/SCS. The exception to this is for schools which are based on total student enrollment and students are used to estimate employees. This does not cause issues when calculating home-based VMT per household population or home-work VMT per employee since the trips generated are related to the population. For special land use types such as hotels or like hospitals, the trips generated are based on both employees and patients/visitors, while the area is used to calculate only employees. As such, the VMT per service population for special uses may be much higher than other uses due to the exclusion of persons generating activity not included in the service population estimate. It is recommended that rather than using VMT per Service Population as a screening criterion, special uses not be screened out of analysis and instead perform analysis to reflect the characteristics of the land use development.

Next Steps

The model will be updated in 2023 to reflect travel behavior, household travel surveys, and land use changes. Fehr & Peers will coordinate with MCAG staff to determine how the interregional travel is reflected, particularly in the trips exiting the model area. Separating trucks from passenger trips, including interregional transit, and other enhancements to the model may also be considered.

FINAL

Regional Transportation Plan Sustainable Communities Strategy for Merced County

2022

MCAG

MERCED COUNTY ASSOCIATION OF GOVERNMENTS

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01

1. Executive Summary

The Merced County Association of Governments (MCAG) has prepared this 2022 update to the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) to address current regional goals and priorities for our growing and evolving communities. The RTP/SCS is a long-range plan, with a 24-year horizon to the year 2046.

Ultimately this plan seeks to ensure that the Merced County transportation system will continue to operate efficiently in the future with sufficient capacity to meet demand and that mobility options are available for all of Merced County's residents. The RTP focuses on our regional transportation infrastructure needs, while the SCS addresses planned growth patterns that have been defined by local cities and the County. Linking the RTP and SCS binds these two processes together, ensuring that planned additions and modifications to the regional transportation network are addressing both existing and future needs.

Growth in Merced County is expected to be driven in part by lower housing costs relative to neighboring regions, with people choosing longer commutes in exchange for affordability. While agribusiness is expected to continue as the leading job provider in the county, health care and service jobs are also on the rise. The expected extension of the Altamont Corridor Express to Merced and the development of California High Speed Rail could further accelerate growth in the county. The RTP/SCS includes transportation investments to address existing and future needs of the region.

This plan was developed in accordance with state and federal requirements, including the Sustainable Communities and Climate Protection Act (SB 375) which is intended to reduce transportation related greenhouse gas emissions, and the Fixing America's Surface Transportation Act (FAST Act) and the 2021 Bipartisan Infrastructure Act, which require a performance-based approach to the Plan's development.

Preferred Scenario

The 2022 RTP/SCS is based on a preferred land use and transportation investment scenario. This scenario is referred to as Scenario 3: Conserve & Connect Merced County, or simply "the Plan". The Plan emphasizes controlled concentric growth, largely within the limits of the respective General Plans of local jurisdictions within Merced County. Development focuses on empty lots within city limits and gradual growth directly connected to established neighborhoods. This scenario allows for growth in unincorporated communities, but no new unincorporated communities will be established. Development will be concentrated to minimize any conversion of prime farmland, focusing on "upward development" instead of "outward development."

This development emphasis results in a higher average housing density of 10.9 units per acre (compared to a 7.3 unit per acre baseline) and aims to place housing closer to jobs and services. The higher housing density comes via greater reliance on smaller-lot single family homes and multi-family housing. This development also focuses on housing and jobs in areas that are more walkable and around major transportation corridors. Some mixed-use development will be pursued in larger cities to maximize accessibility by active modes. Scenario 3 also encourages the development of new transit, bicycle and pedestrian improvements, especially those on key corridors and near schools. Roadway maintenance funding will be maintained. Transit services will transition to a zero-emission fleet. MCAG and Transit Joint Powers Authority (TJPA) will work to aggressively pursue alternative funding methods to implement this transition as soon as possible.

Scenario 3 also includes the enhancement of passenger rail services in the region. These improvements include the arrival of the Altamont Corridor Express (ACE) in Merced County with new stations in Merced, Livingston, and Atwater. Existing rail service on the Amtrak San Joaquins will be increased through the double track improvements on the existing right-of-way and through cross-platform connections to ACE and to California High-Speed Rail at a unified station in Merced. These connections will provide faster direct travel to an expanded list of destinations throughout the San Joaquin Valley, the Tri Valley, Bay Area, and Sacramento Valley. Implementation of the Plan, as compared to the Baseline Scenario, results in a decrease in average vehicle commute trips length and in the percentage of trips made by single-occupancy vehicles; a decrease in congested lane miles, congested vehicle miles traveled, and vehicle hours of delay; an increase in transit ridership and in household proximity to transit services, and an increase in total transportation investments in bicycle and pedestrian related projects.

Goals and Objectives

The goals and objectives for the 2022 RTP/SCS were established to meet the regulatory requirements of the FAST Act, the Clean Air Act, Title VI of the Civil Rights Act, Senate Bill (SB) 375, the California Complete Streets Act, and the California Environmental Quality Act (CEQA). They were tailored specifically to the unique needs of Merced County and incorporate feedback that was received from the public during the planning process. Each goal was associated with specific performance measures to compare different planning alternatives against current conditions.

1. **Active Transportation (Bicycle & Pedestrian):** A regional transportation system for bicyclists and pedestrians. Create a safe, connected, and integrated regional transportation system for bicyclists and pedestrians.

2. **Air Quality*:*** Achieve air quality standards set by the Environmental Protection Agency (EPA), and the State Air Resources Board**.**

3. **Aviation:** Provide a fully-functional and integrated air service and airport system that complements the countywide transportation system.

4. **Energy:** Reduce usage of nonrenewable energy resources for transportation purposes.

5. **Goods Movement:** Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

6. **Highways, Streets, and Roads:** Provide a safe and efficient regional road system that accommodates the demand for movement of people and goods.

7. **Land Use Development Patterns and Strategies:** Provide economical, long-term solutions to transportation problems by encouraging community designs that encourage walking, transit, and bicycling.

8. **Outreach and Coordination:** Provide a forum for participation and cooperation in transportation planning and facilitate relationships for transportation issues that transcend jurisdictional boundaries.

9. **Passenger Rail:** Provide a rail system that offers safe and reliable service for passengers.

10. **Reduce Project Delivery Delays**: Efficiently use available transportation funding to expedite delivery of transportation improvements within the region, and delivery of the Measure V expenditure plan.

11. **Reliability & Congestion:** Achieve a significant reduction in congestion on the National Highway System. Improve the efficiency of the surface transportation system.

12. **Safety for all Roadway Users:** Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

13. **Smart Infrastructure:** Coordinate, monitor, and integrate planning and programming for intelligent transportation system (ITS), smart infrastructure, demand-responsive transportation, and automated vehicles.

14. **Social Equity and Environmental Justice:** Promote and provide equitable transportation and housing options for all populations and ensure that all populations share in the benefits of transportation improvements.

15. **Sustainable Communities*:*** Reduce per capita greenhouse gas emissions through compact growth and alternative transportation strategies. Protect and enhance the natural environment. Support vehicle electrification and the provision of electrification infrastructure in public and private parking facilities and structures. Support a vibrant and sustainable regional economy. Maximize the use of Regional Early Action Planning 2.0 funds to implement and advance efforts to reduce per capita greenhouse gas emissions.

16. **System Preservation:** Maintain the existing transportation system in a state of good repair.

17. **Transit:** Provide an efficient, effective, coordinated regional transit system that increases mobility for urban and rural populations, including transportation for disadvantaged persons.

18. **Transportation Financing:** Develop and support financing strategies that provide for a continuous implementation of the Regional Transportation Plan projects and strategies.

Regional Transportation System

Merced County is served by a multimodal transportation system that incorporates roadways, railways, airports, and multiuse paths to facilitate the movement of people and goods throughout the region. Interstate 5 and State Route 99 provide the primary connection to major cities within Merced County, and link the county to other parts of California and beyond. Transit service by national, regional, and local providers is available as an alternative to vehicular travel for individuals who choose not to drive, are unable to, or do not have access to a vehicle.

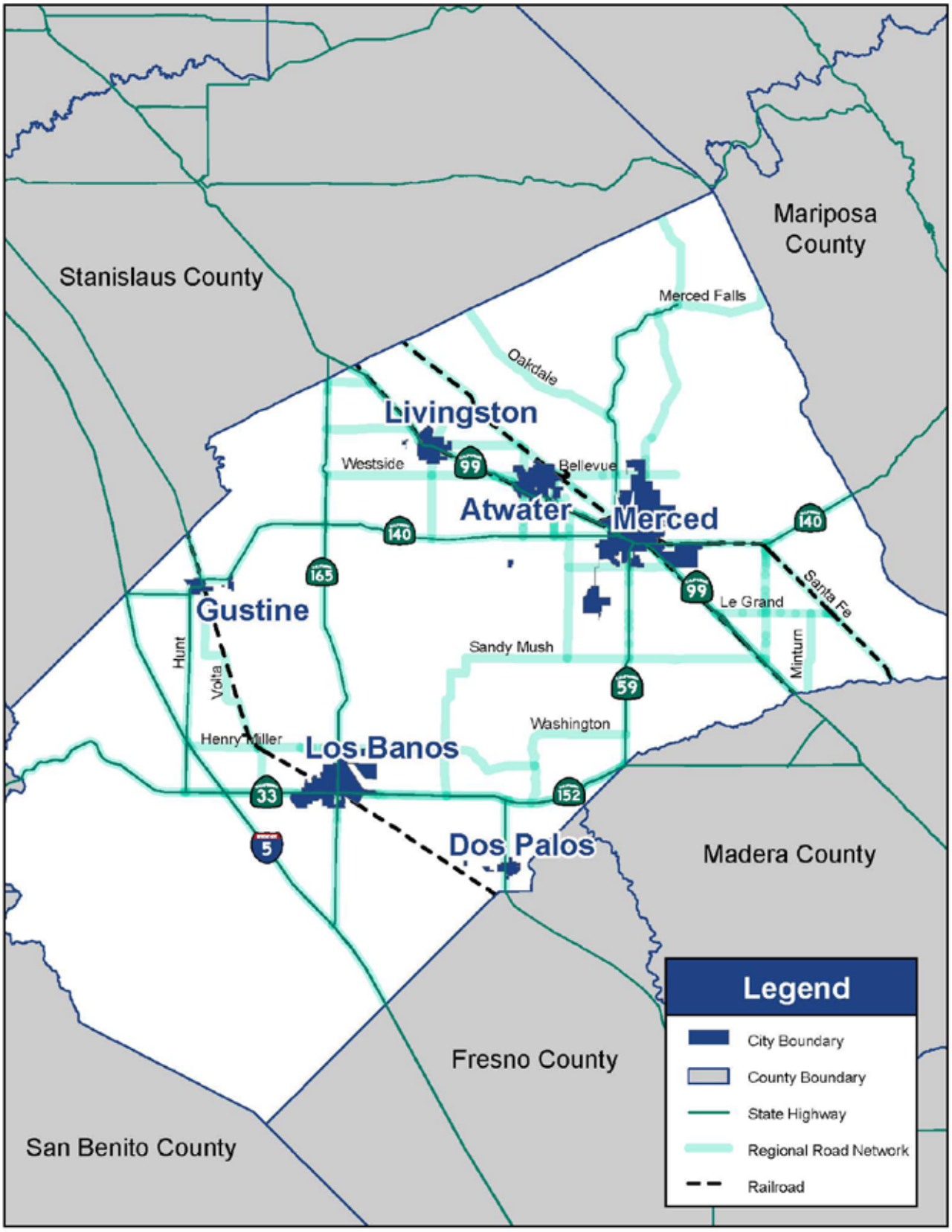
A multimodal transportation system offers the most diversity and flexibility for a strong economy, sound environment, and a livable community. The regional transportation system should provide links between various modes, and should work in concert to meet the goals of the 2022 MCAG RTP/SCS Plan. There is no single mode or solution that can meet the region's transportation needs. The regional transportation system of state highways and major intercity roadways is shown in **Figure 1.1**.

Commuters

Like many Valley communities, Merced County has seen single-occupancy commuting continue to increase over time. According to the 2019 American Community Survey, 77 percent of workers in Merced County drove alone to their jobs.

In 2019, 30% of Merced County workers had jobs outside the county, the largest proportion in the Northern San Joaquin Valley. The share of commuters with jobs in the Bay Area was 10%. The share of out-of-county residents working jobs in Merced county declined between 2012 and 2019, meaning more jobs in Merced County are now filled by local residents. (*Trends In Commute Patterns Across The Northern San Joaquin Valley*, University of the Pacific, April 2021).

Figure 1.1 – Merced County Regional Transportation System



System Preservation

The RTP/SCS recognizes that adding capacity to the transportation network is costly, not always possible, and not always the best solution. Therefore, the plan also considers the state of existing infrastructure, usage patterns that use more of the available capacity than is necessary, and how different transportation modes can meet needs. The plan provides resources and programs to maintain the existing infrastructure, and to find ways to extend facility life and usefulness. Aspects of system preservation include operations and maintenance, safety, reliability, and efficiency.

Roadway Pavement Conditions

There are approximately 576 miles of roadways on the Regional Road system in Merced County and approximately 279 of those miles are State Highways. Caltrans has set aside funds for maintenance of their system. The responsibility for maintenance of the remaining 297 miles of Regional Road system and the more than 2,000 miles of off-system roads rests with the seven local jurisdictions. **Table 1.1** provides a Pavement Condition Index (PCI) for each member agency in Merced County. As shown, all Merced County jurisdictions have Fair to Very Poor pavement conditions, except for the City of Livingston. This suggests a great need for a system preservation effort in Merced County. The implementation of Measure V and SB 1 have helped Cities and the County to fund numerous road maintenance projects to rehabilitate and protect the local and region's roadway network. More than two dozen road maintenance project are in included in the Tier 1 project list: **See Chapter 9**, **Table 9.2**.

Table 1.1 – Existing (2018) Pavement Conditions

Jurisdiction	Pavement Condition Index (PCI)	Condition	Maintained Centerline Miles	Daily Vehicle MilesTraveled (DVMT) (1,000s)
Atwater	66	Fair	96	210
Dos Palos	39	Very Poor	23	23
Gustine	55	Poor	22	15
Livingston	77	Satisfactory	47	67
Los Banos	59	Fair	127	184
Merced	55	Poor	270	615
Merced County (Unincorporated)*	45	Poor	1921	1469

PCI and Road Condition based on *PAVER Pavement Management System Summary Report (September 2018).*Prepared for MCAG by Dynatest North America, Inc. Centerline miles and DVMT data from Caltrans *Highway Performance Monitoring System (HPMS), 2018.*

Transit Operations and Cost

"The Bus" is a county-wide consolidated transit program administered and governed by the Transit Joint Powers Authority for Merced County (TJPAMC or TJPA). The Bus was formed from four (4) former local public transit service providers in July 1996. Regional fixed route, deviated fixed route, and paratransit services are provided throughout the region, with local routes operating in Atwater and Merced.

According to its triennial audit, the TJPA was not deficient in financial management and capacity, technical capacity, maintenance, procurement, or project planning. The RTP provides funding for continued operation of transit services in Merced County, as well as funding for improved services to meet future demand.

Safety

According to the California Office of Traffic Safety, collisions in Merced County resulted in approximately 2,270 injuries or fatalities in 2019, ranking 9th out of 58 counties in California for the highest number of injuries and/or deaths per capita (In 2015 Merced ranked 26th). Of these injuries or deaths, 315 (or 14 percent) resulted from an alcohol involved collision, the 8th highest per capita out of California counties. A total of 63 (or 3 percent) involved a bicyclist, and 98 (or 4 percent) involved a pedestrian.

Reliability

It is the goal of this RTP/SCS to ensure that transportation users have predictable travel times for trips they make on a regular basis. While not all congestion is avoidable, measures to reduce the severity and duration of system disruptions from crashes, inclement weather, construction activity, or other events will reduce time wasted by leaving early to ensure on-time arrivals.

Travel Demand Management

The purpose of Travel Demand Management (TDM) programs is to reduce transportation demand by providing alternatives or programs to single-occupancy vehicle travel, with the ultimate goals of reducing congestion and increasing air quality and public health. One of the goals of TDM programs is to help travelers make more informed decisions about the routes they choose or the time of day they travel if they have confidence in the information they have available on the reliability of the roadway or system.

As of January 2014, the San Joaquin Valley Air Pollution Control District (SJVAPCD) eTRIP Rule (Rule 9410), or the Employer Based Trip Reduction rule, requires larger employers to establish a plan to encourage employees to carpool or use transit services to reduce single-occupancy vehicle trips. In addition, this RTP includes several projects and programs aimed at reducing single-occupancy vehicle use in the county, including participating in "Dibs" rideshare promotion, membership in CalVans for vanpooling options, the ACE Train extension, and other transit service improvements.

Dibs is a travel service available in Stanislaus, San Joaquin, and Merced Counties that provides information about transportation options. The goal is to improve air quality, public health, and roadway operations by promoting Smart Travel solutions such as carpooling, vanpooling, riding transit, biking, and walking.

CalVans is a program offered by the California Vanpool Authority that provides van-share options for qualified California residents. CalVans allows for individuals to use available vehicles for their personal or commute needs without having to own a car themselves.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) use technology to increase the efficiency and safety of a transportation network. ITS manages traffic flow and helps to increase reliability by reducing the impacts and duration of incidents, as well as smoothing traffic flows to slightly increase roadway capacity without adding new lanes.

Future Conditions

The ways in which the Merced County region grows over the next 24 years have implications for the transportation system that will be needed to accommodate this growth. Growth in regional population and employment numbers will affect commute patterns, mobility needs, and increase travel demand. Implementation of the Plan (Scenario 3: Conserve & Connect Merced County) responds to regional growth with coordinated transportation investments aimed at addressing mobility, safety, health, and environmental needs. Performance measure results of the Plan as compared to two other scenarios are presented in **Chapter 8** and **Appendix L**.

Demographics

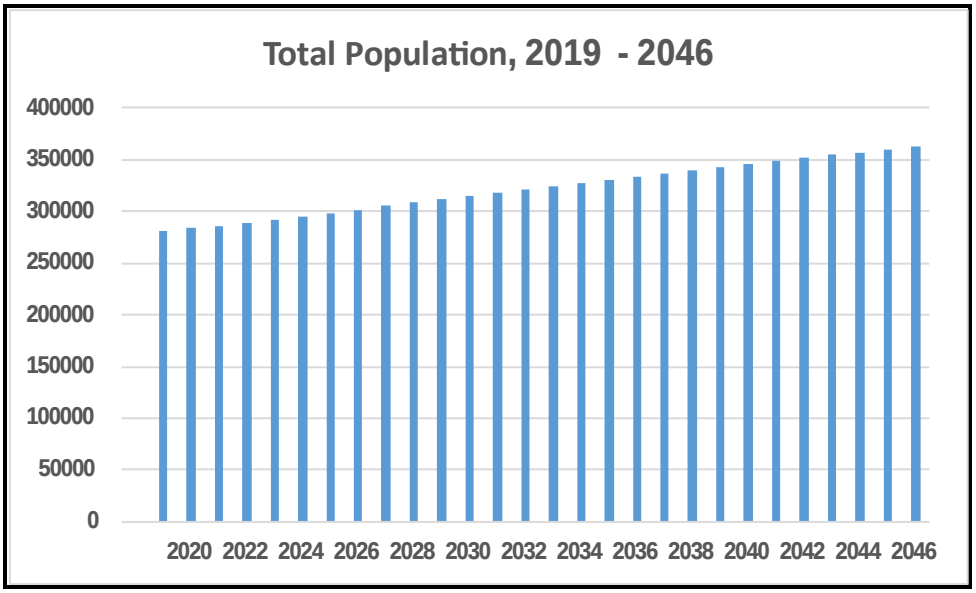
Between 2010 and 2015, the population of Merced County increased by approximately 6 percent. This growth is higher than the growth for the State of California (approximately 3 percent from 2010 to 2015). As of 2016, nearly 60 percent of Merced County residents were of Hispanic or Latino origin and median incomes were

nearly $20,000 less than for California as a whole.

Merced County is expected to increase by approximately 82,000 persons, 27,000 jobs, and 34,000 households by 2046.

Increases in population drive the need for more jobs and housing options. This is especially true in Merced County given that the county accommodates excess housing demand of neighboring Bay Area and Sacramento counties. Overall, Merced County is expected to increase by approximately 82,000 persons (as shown in **Figure 1.2**), 27,000 jobs, and 34,000 households by 2046.

Figure 1.2 – Merced County Population Growth Forecast



By year 2046, Merced County is projected to grow by approximately 82,000 persons (a 29% increase), 34,000 households (a 42% increase), and 27,000 jobs (a 32% increase).

Commute Travel

Even with increases in the number of households within the county, it is likely that Merced County will continue to have a worsening jobs/housing imbalance as Bay Area commuters continue to move into the county. To

address the long-standing imbalance of jobs and housing, the region must go beyond attempting to simply improve commuter travel times and develop policies to encourage, attract, and retain quality, higher-wage jobs through land use and fiscal decisions that develop Merced County as a desirable location for employers and employees. Strategies to attract a mix of high-tech and industrial manufacturing jobs will rely heavily on providing a higher quality transportation infrastructure and more viable transportation options to make businesses more efficient, as well as providing community amenities that attract new businesses and a highly-qualified workforce. Implementation of the Plan will result in a decrease in average vehicle commute trips length, and a decrease in the percentage of trips made by single-occupancy vehicles, as compared to Scenario 1 (Baseline).

Transportation System Operations

Even with those changes, long-distance commuting is likely here to stay. Vehicle miles traveled on Merced County roadways will continue to climb without competitive and convenient alternatives in the form of public transit, travel demand management strategies, and new transportation technologies. Under future conditions (without the implementation of the Plan), operations on the region's roadway network are projected to worsen along State Route (SR) 59, SR 140 in the City of Merced, and SR 165 in the City of Los Banos. In addition, the volume on Santa Fe Drive between the Stanislaus County Line and SR 59 is projected to exceed its capacity by 2046. Implementation of the Plan will result in a decrease in congested lane miles, congested vehicle miles traveled, and vehicle hours of delay as compared to Scenario 1 (Baseline).

Alternative Transportation

Transportation facilities that encourage non-vehicular (auto) travel, including transit, bicycle, and pedestrian travel, use will help the county to meet emissions reduction standards by reducing the amount of vehicle trips and vehicle miles traveled.

Public transit services aim to meet the basic transportation needs of Merced's transit-dependent population, while providing efficient and reliable mobility alternatives to vehicular travel for a variety of trip purposes. Implementation of the Plan will result in approximately $638 million dollars spent on transit (bus and rail) projects throughout the county. In addition, the Plan is anticipated to result in an increase in transit ridership (to 1.5% of total trips), and an increase in the number of households within a one-half mile from transit services, as compared to Scenario 1 (Baseline). Active transportation options also contribute to reduced traffic congestion, improved air quality, and a better overall quality of life within the county. Implementation of the Plan will result in approximately $205 million dollars spent on active transportation (bicycle and pedestrian) projects throughout the county, and is forecast to result in a 9% mode-share of total trips within the region.

Future Transportation Technologies

Several important technologies have already changed the way we travel, including the use of phone applications to navigate, plan, and arrange for transportation service, and the increasing adoption of electric cars.

Some of the common challenges that transportation technologies may help to solve include:

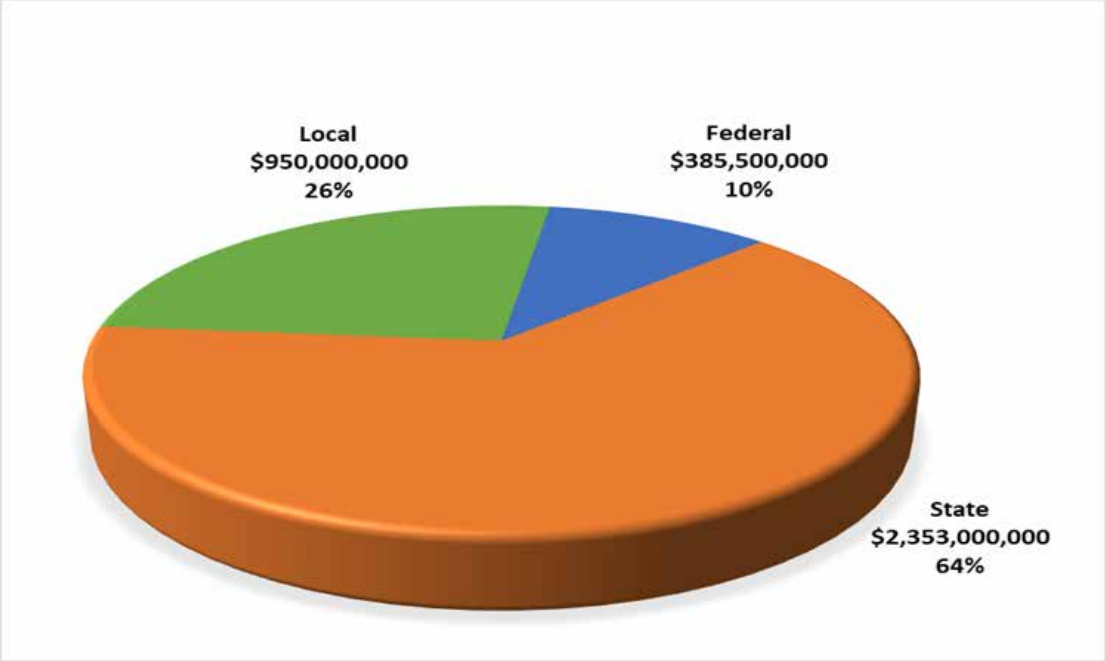
- Providing first and last mile transit service for transit users to connect underserved communities
- Coordinating data collection and analysis across systems and sectors
- Limiting the impacts of climate change and reducing carbon emissions
- Facilitating the movement of goods into and within a city
- Reducing inefficiency in parking systems and payment
- Optimizing traffic flow on congested freeways and arterial streets

As the county continues to build to house our new residents and accommodate transportation needs, the county needs to use these new technologies to maximize their benefit on mobility and quality of life.

Investment Plan

The 2022 MCAG RTP/SCS financial revenue forecast identifies approximately $3.689 billion in available (inflation adjusted) funding from federal, state and local sources through fiscal year 2046, as shown in **Figure 1.3**.

Figure 1.3 – Revenue Forecast



TOTAL: $3,688,500,000

The largest revenue sources by funding type include:

Federal Funding

- **Congestion Mitigation and Air Quality (CMAQ) Funds**, which are intended to fund transportation projects or programs that will contribute to attainment or maintenance of the National Ambient Air Quality Standards (NAAQS) for ozone, and particulate matter (both PM10 and PM2.5).
- **Surface Transportation Block Grant Program (STBG)**, which provides funding that may be used by the region and localities for a wide range of projects to preserve and improve the conditions and performance of surface transportation, including highway, transit, intercity bus, bicycle and pedestrian projects.
- **Federal Transit Funding Programs**, which include Federal Transit Administration Section 5307 for urbanized areas (50,000 plus population) for public transportation capital investments, and operating expenses in areas (under 200,000 population) from the Mass Transit Account of the Highway Trust Fund (HTF). The programs also include Federal Transit Administration Section 5311 for non-urbanized transit systems which distributes funds on a formula basis for capital and operating expenses.
- **Consolidated Rail Infrastructure and Safety Improvement Grants (CRISI)**, which is a competitive program that funds projects that improve the safety, efficiency, and reliability of intercity passenger and freight rail. Projects cover a variety of rail capital improvement projects, safety technology deployment such

as Positive Train Control (PTC), planning and engineering, research, and workforce development and training projects. Under the Infrastructure Investment and Jobs Act (IIJA), this program will provide an annual $1 billion in grant funding over five years.

- **National Infrastructure Project Assistance (also known as "Megaprojects" or MEGA)**, which provides funding for key megaprojects that will likely generate national and/or regional benefits in economy, mobility, or safety. These projects include highway and bridge projects, freight intermodal projects, railway/highway grade separation projects, or intercity passenger rail projects.
- **Infrastructure for Rebuilding America Grant Program (INFRA),** which through IIJA provides $10.9 billion over five years in competitive grants for key infrastructure projects. Examples include highway or bridge capacity projects, highway mobility improvement projects, freight or intermodal projects, and railway/highway grade separation projects.
- **Rebuilding America Infrastructure with Sustainability and Equity Discretionary Grant Program (RAISE)**, which is a competitive grant program for road, rail, transit, and other surface transportation projects. Projects are selected on criteria of safety, sustainability, equity, economic competitiveness, mobility, and community connectivity. IIJA will provide an additional $15 billion to this program.

State Funding

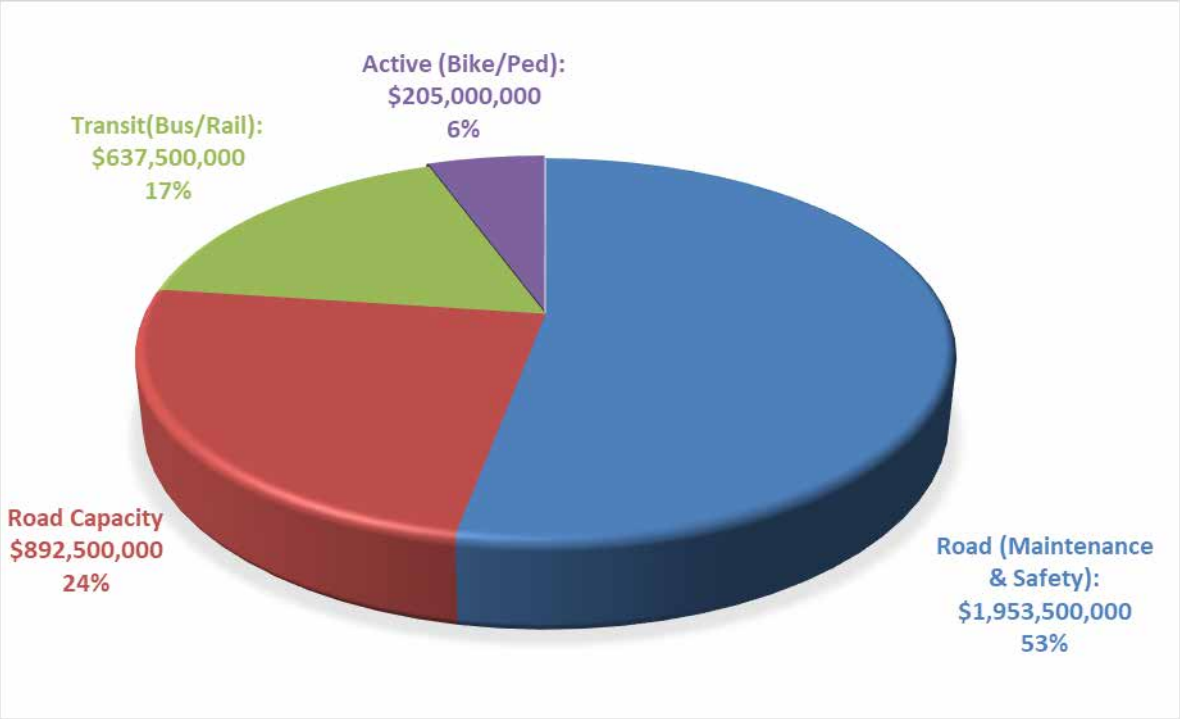
- **State Highway Operation and Protection Program (SHOPP),** which funds State Highway safety and rehabilitation projects, seismic retrofit projects, land projects, building projects, landscaping, operational improvements, bridge replacement, and the minor program. Caltrans is the owner-operator of the State Highway System and is responsible for its maintenance. Unlike STIP projects, SHOPP projects may not increase roadway capacity. SHOPP uses a four-year program of projects, adopted separately from the STIP cycle.
- **Senate Bill 1 (SB 1),** which provides both formula funding programs and competitive funding programs, including State Rail Assistance, Additional State Transit Assistance, Transit and Intercity Rail Capital Project, Trade Corridor Enhancement Program, Solutions for Congested Corridors, Sustainable Communities Planning Grant, and Adaptation Planning Grant.
- **Senate Bill (SB) 132,** which contains almost $1 billion in district-specific road and rail projects in the Merced, Stanislaus, and Riverside counties. The measure includes $400 million in transportation funds for the extension of the Altamont Corridor Express to Modesto, Ceres and Merced, a commuter rail line between the Bay Area and Central Valley. The measure also includes $100 million for a roadway connection project to the UC Merced campus.
- **State Transportation Improvement Program (STIP),** which is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded primarily from state and federal gas taxes. STIP programming occurs every two years. The programming cycle begins with the release of a proposed fund estimate, followed by California Transportation Commission (CTC) adoption of the fund estimate.
- **Local Transportation Fund (LTF),** which represent a portion of the Transportation Development Act (TDA) dollars derived from a ¼ percent statewide general sales tax imposed for transportation purposes. LTF funds were deemed local because they were not subject to state appropriation or apportionment.
- **Public Transportation Account (PTA)**, which may only be used for transportation planning and mass transportation purposes. PTA is a formulaic program distributed to planning agencies and public transportation operators. Funds may be used for operating assistance, capital acquisition and improvements, and community transit services. PTA may also be used for intercity rail, rail and mass transportation planning, and transportation research activities through the University of California.

Local Funding

- **Measure V Funds** was passed by voters in November 2016 to implement a 30-year, ½ cent transportation les tax in Merced County. Measure V funds are provided for the following categories: Transit, Eastside Regional, Westside Regional, and Local. Estimates were gleaned from the MCAG Measure V first year revenue estimates, which estimates that the measure will generate approximately $18 million per year based on the one-half cent sales tax for an estimated total of $540 million over the course of the measure's lifetime.
- **Local Funds (Development Impact Feeds and Local General Fund),** which are collected during the development process, were used to the improve local road system within each jurisdiction.

A variety of other federal, state and local funding sources are also included in the investment plan and described in **Chapter 6**. With funds identified in the investment plan, the 2022 RTP/SCS includes transportation projects that addresses short-term and long-term mobility and safety needs. The Plan includes approximately $1.54 billion in specifically identified project costs (Tier I). Another $2.15 billion in spending is assumed through 2046 on projects that will be identified in later years. Additional information on the Plan project list is included in **Appendix K**. **Figure 1.4** shows how funding is allocated by project type. **Figures 1.5 (a-g)** present the locations of the major Plan projects by jurisdiction. Note: not all projects are shown on the maps. Please refer to **Table 9.2** for a full project listing.

Figure 1.4 – Plan Expenditures by Project Type



Total: $3,688,500,000

Figure 1.5a – Countywide Project Map

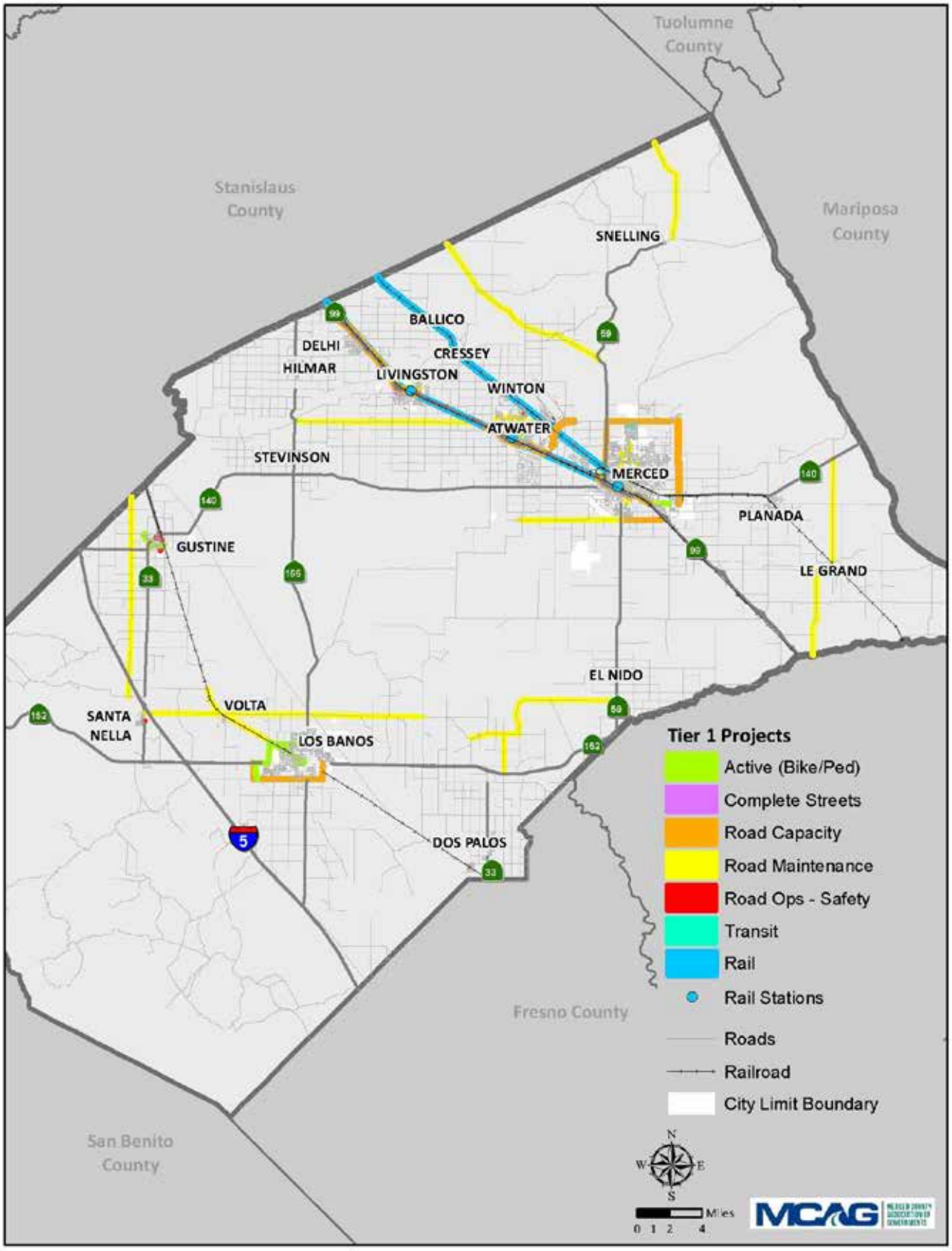


Figure 1.5b – City of Atwater Project Map

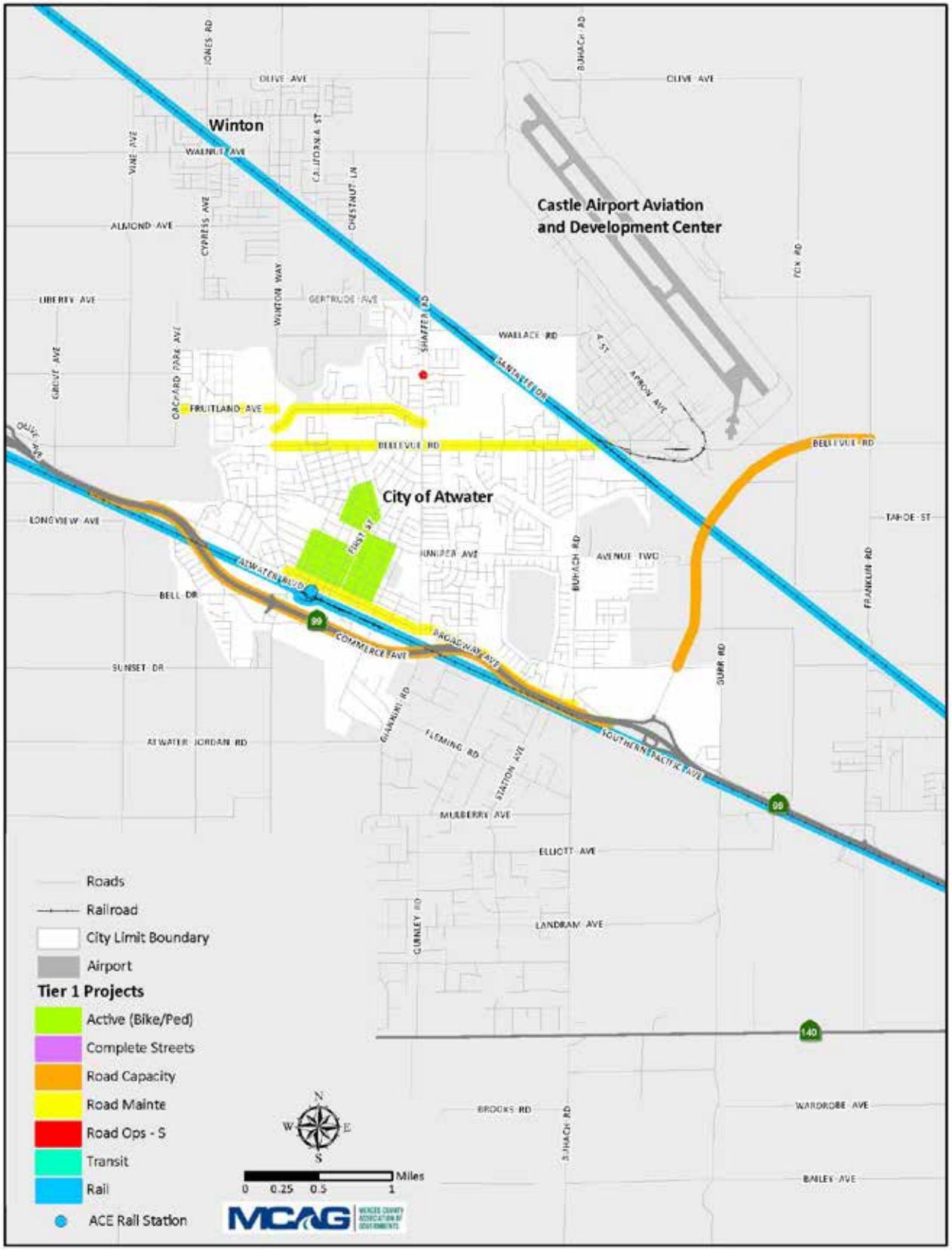


Figure 1.5c – City of Dos Palos Project Map

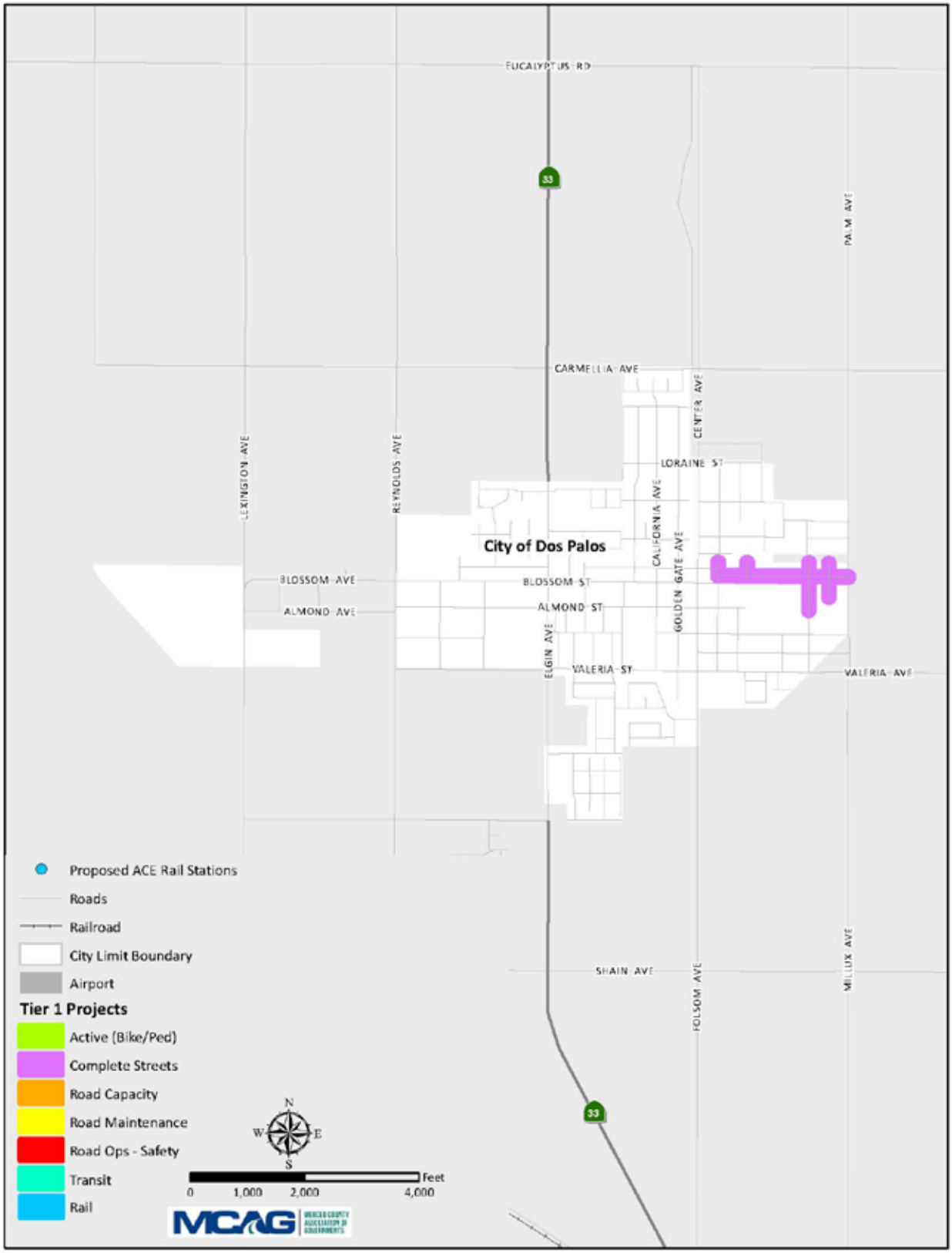


Figure 1.5d – City of Gustine Project Map

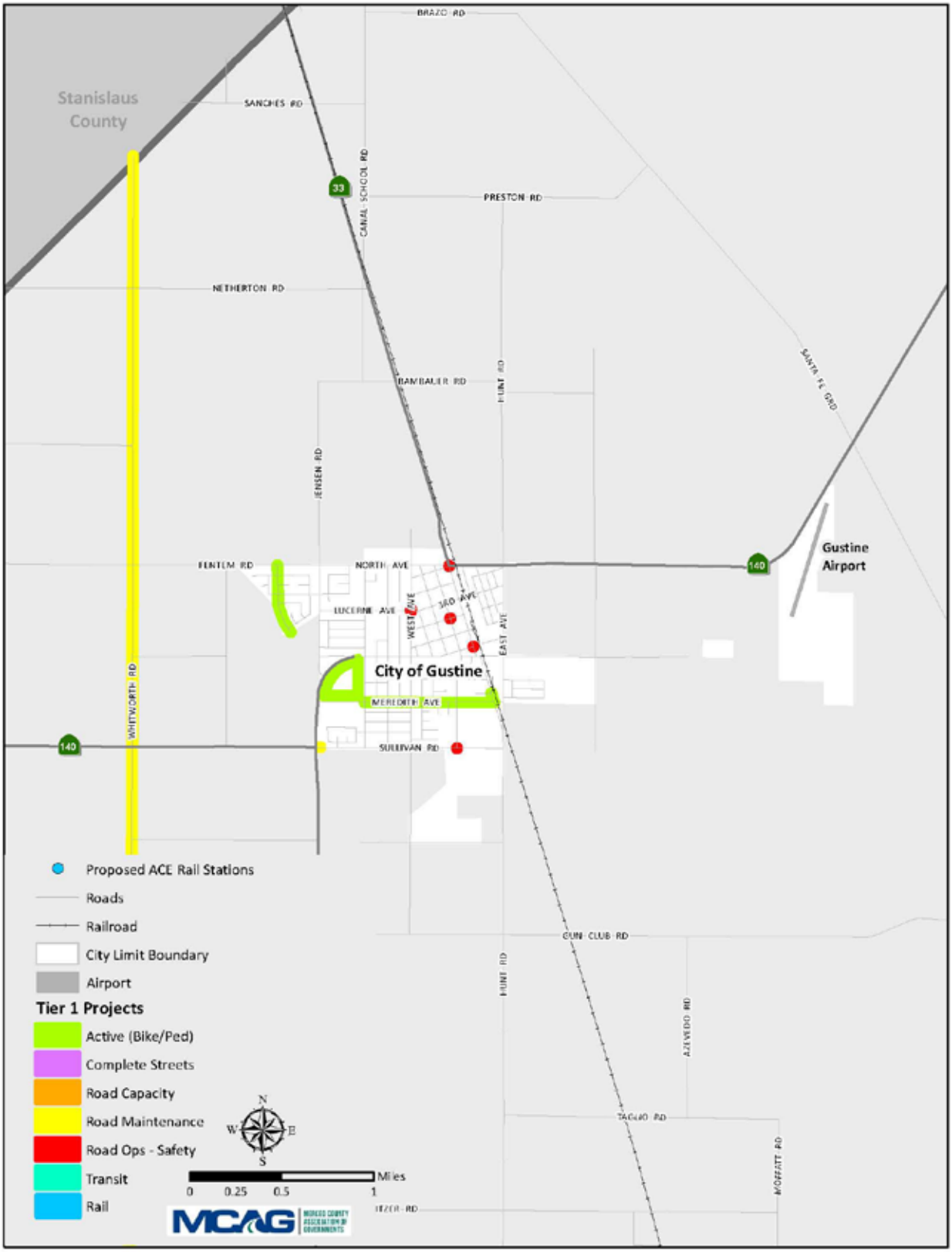


Figure 1.5e – City of Livingston Project Map

Figure 1.5f – City of Los Banos Project Map

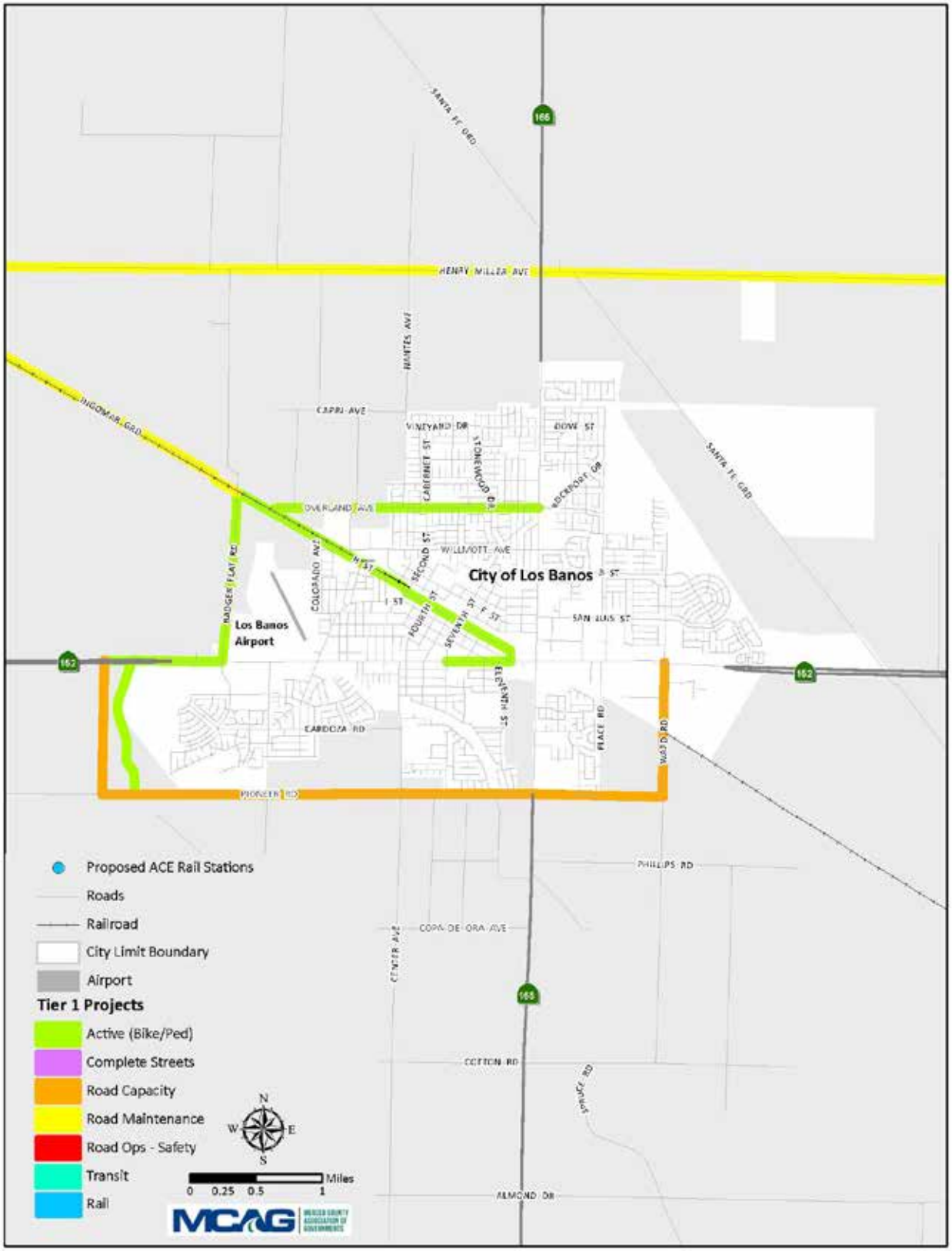
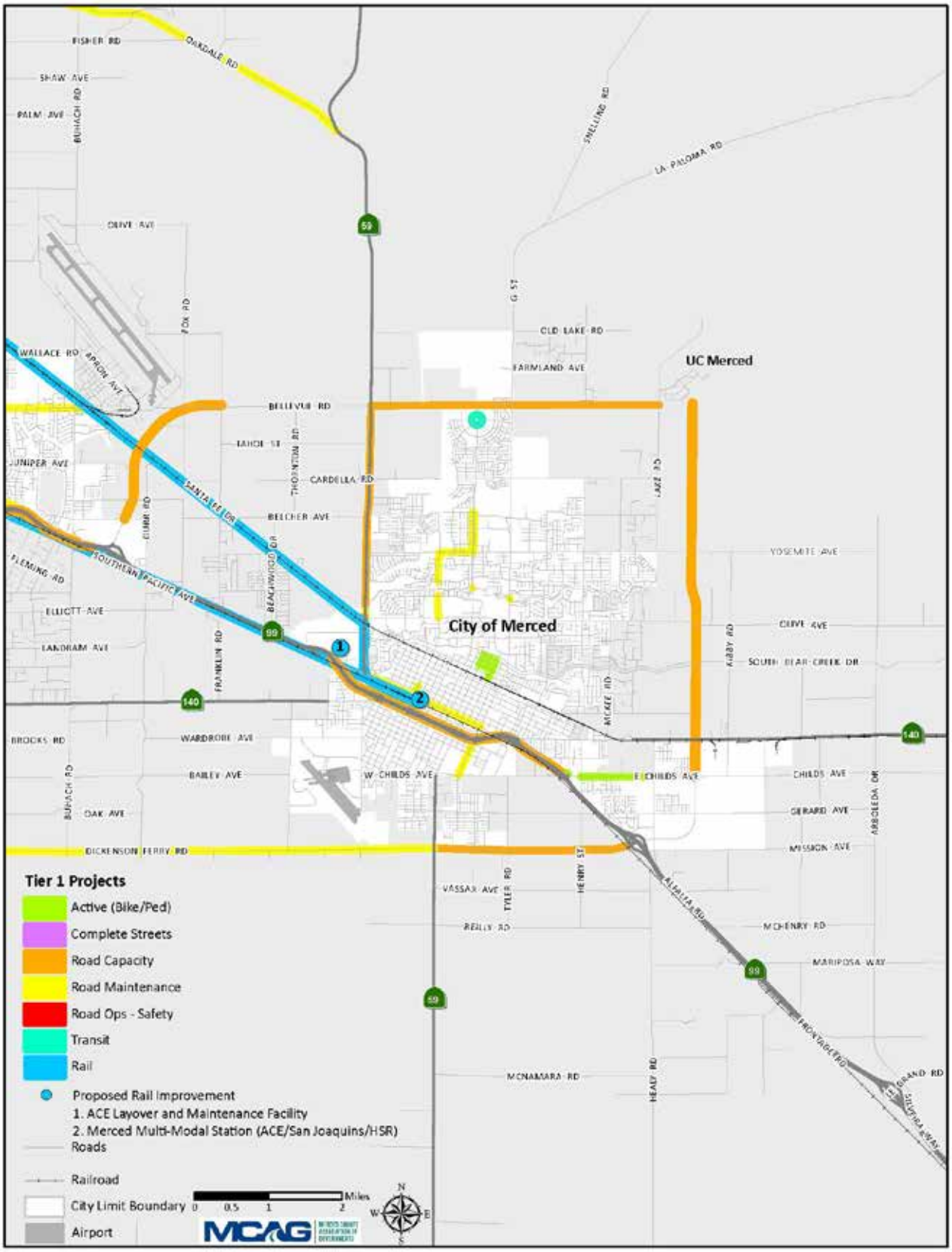


Figure 1.5g – City of Merced Project Map



Equity

An important requirement in preparing the 2022 RTP/SCS is ensuring that Environmental Justice (EJ) is addressed and adhered to in the 2022 RTP/SCS Plan. The emphasis on EJ is intended to protect low-income and minority individuals across the Merced County region by identifying and addressing any disproportionately high and adverse effects of the Plan on minority and low-income populations.

The RTP/SCS evaluated the benefits and burdens associated with the transportation investments identified in the 2022 RTP/SCS. Of the eleven major roadway and five major transit projects included in the Tier I Project List, all include portions located within EJ areas. Similarly, transit service enhancements that are planned primarily serve EJ areas within the county. EJ analysis is provided in greater detail in **Chapter 10**.

Implementation of the Plan reduces vehicle miles of travel for all users of the transportation system while increasing the amount of funding available for alternative modes of transportation, including transit, bicycling and walking – which benefit low-income and minority populations to a greater degree.

Public Outreach

This plan was developed in partnership with Merced County residents through an extensive program of public involvement including workshops, public presentations, and solicitations for input. The overall outreach goals of the 2022 RTP/SCS planning process included the following:

- To engage the broadest cross-section of Merced County residents, businesses, and transportation providers in planning for future transportation needs.
- To make the planning process accessible, interactive, and engaging.

A variety of outreach strategies were employed to maximize participation from all population groups regardless of age, gender, race, ethnicity, national origin or political affiliation, including the provision of Spanish interpreter services at workshops and presentations. Public outreach is discussed in greater detail in **Chapter 11** and **Appendix O**.

Outreach efforts included, but were not limited to:

- Public workshops
- Advisory committee presentations
- Online surveys
- Public scoping meeting for the Environmental Impact Report (EIR)
- Public hearings

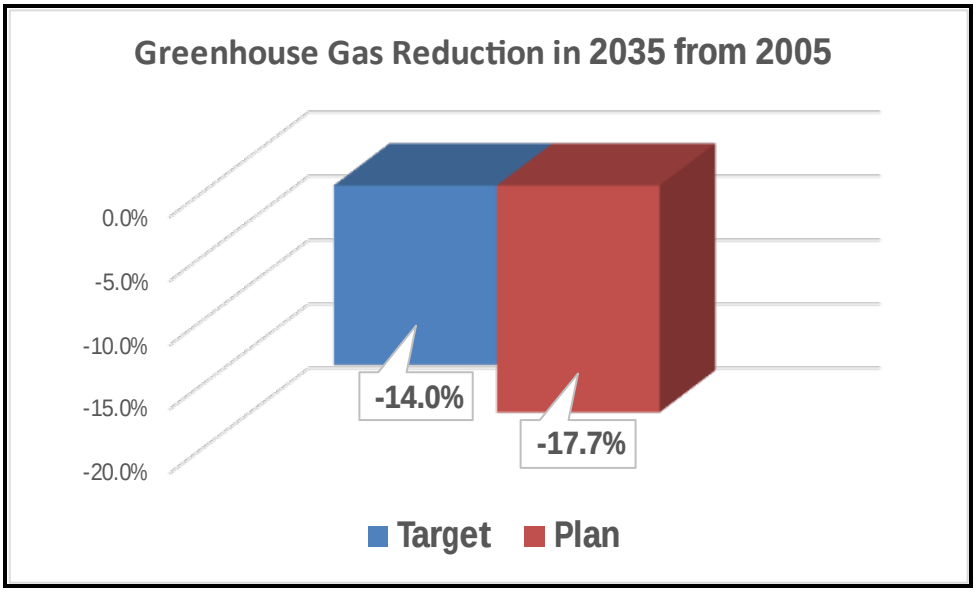
Two (2) bilingual (Spanish and English) virtual workshops were held. These workshops were promoted through eNews, MCAG Newsletter, and at all public presentations.

Air Quality

Pursuant to Section 176 (c)(4) of the 1990 Federal Clean Air Act Amendments (CAAA), Metropolitan Planning Organizations (MPOs) such as MCAG must demonstrate that the RTP conforms to the applicable State Implementation Plan (SIP). This process is described in the Federal Transportation Air (FTA) Quality Conformity Rule. The purpose of conformity is to ensure that regional transportation planning and programming remain consistent with state and local air quality planning efforts to expeditiously achieve and/or maintain the health-based National Ambient Air Quality Standards (NAAQS). Analysis completed as part of this project shows that the Plan will meet required vehicle emissions budgets.

The Sustainable Communities and Climate Protection Act of 2008 (SB 375) requires that California's 18 MPOs, including MCAG, incorporate an integrated Sustainable Communities Strategy (SCS) as part of the RTP/SCS. Related to greenhouse gas (GHG) emissions, SB 375 also requires that SCS's must be able to achieve the GHG reduction targets established by the California Air Resources Board (CARB). With the implementation of this Plan, the Merced region can meet and exceed the greenhouse gas (GHG) targets provided under SB 375, as shown in **Figure 1.6**.

Figure 1.6 – RTP/SCS GHG Reduction Per Capita



Conclusion

The 2022 update to MCAG's RTP/SCS furthers the commitment made to voters who authorized Measure V in November 2016 to develop an efficient and sustainable transportation system in Merced County that will promote sustainable travel, spur growth and economic development, and improve quality of life for all County residents. The plan is also responsive to the federal- and state-level planning requirements needed to ensure access to program funds.

When fully implemented, Merced County residents will have access to a variety of new mobility options, safer and more reliable roadways, and our region will be more competitive in attracting employers and high wage jobs that will spur economic development and enhance quality of life countywide.

02

2. Introduction

The Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS, or plan) specifies the policies, projects, and programs necessary over a 24-year period to maintain, manage, and improve the region's transportation system, including roadways, transit, rail, bicycle and pedestrian, and airport facilities. The plan provides a comprehensive long-range view of transportation needs and opportunities for Merced County.

With the passage of Senate Bill (SB) 375 in 2008, Merced County Association of Governments (MCAG is required to develop a Sustainable Communities Strategy (SCS) to plan for land use development and transportation improvements that can work together to meet greenhouse gas emission reduction targets. As such, the RTP/SCS provides a foundation for transportation and land use decisions to accommodate growth and development in Merced County through 2046. As the Regional Transportation Planning Agency (RTPA) and the Metropolitan Planning Organization (MPO) for the county, MCAG is responsible for all long range transportation planning project programming, but has no authority over land use policies.

MCAG is the federally-mandated Metropolitan Planning Organization (MPO) and the state-designated Regional Transportation Planning Agency (RTPA) for Merced County and the six incorporated cities (Atwater, Dos Palos, Gustine, Livingston, Los Banos, and Merced). As the MPO/RTPA, MCAG is responsible for developing the RTP/SCS through a formal planning process in coordination with local, state, and federal planning partners and members of the public. As such, the 2022 RTP/SCS was developed through public outreach efforts and involvement by the cities of Atwater, Dos Palos, Gustine, Livingston, Los Banos, and Merced, as well as Merced County.

This chapter introduces the regulatory setting and planning initiatives that provide the framework the development of the 2022 RTP/SCS. This chapter also presents a summary of demographic forecasting efforts that informed the land use and transportation investment decisions associated with the plan.

RTP/SCS Preferred Scenario

The 2022 RTP/SCS is based on a preferred land use and transportation investment scenario, referred to as Scenario 3: Conserve & Connect Merced County or simply "the Plan" . This scenario emphasizes controlled

concentric growth, largely within the limits of the respective General Plans of local jurisdictions within Merced County. Development focuses on empty lots within city limits and gradual growth directly connected to established neighborhoods. There is greater reliance on multifamily housing and smaller-lot single-family homes. This scenario allows for growth in unincorporated communities, but no new unincorporated communities will be established. Development will be concentrated to minimize any conversion of prime farmland, focusing on "upward development" instead of "outward development." Other key features of Scenario 3: Conserve & Connect Merced County.

- Housing density (on regional average) of 10.9 units per acre
- More focus on walkability/bicycling and transit accessibility of housing and jobs
- Increased level of investment for transit operations
  - Continue providing microtransit (described on Page 47) on Westside and free fares (fixed routes, paratransit, and microtransit) to seniors, veterans, and ADA-eligible riders
  - Invest to extend microtransit to Eastside and further expansion of service
  - Invest to increase bus service frequency and to provide additional fixed routes (as demand warrants) with greater emphasis on multifamily and mixed-use development to jobs, services, shopping, and multimodal connectivity (passenger rail, air, and other services like YARTS and Greyhound)
  - Invest to provide multimodal connections to passenger rail, air, and other services
  - Strive to transition to zero-emission bus fleet sooner
- Invest in a connectivity study to coordinate with passenger train (Amtrak and ACE)
  - Consideration of bus services to meet train arrivals
  - Ensure convenient walk and bike access to train station locations
  - Examine accessibility of passengers from outlying areas
- Invest in more bike/pedestrian facilities & improvements
- Increase investments for rideshare and vanpooling
- Invest in non-capacity-increasing traffic flow improvements (signals synchronizations; roundabouts).

The 2022 RTP/SCS scenario development and evaluation processes are described in **Chapters 7** and **8**, respectively.

Regulatory Setting & Planning Requirements

This 2022 RTP/SCS sets the foundation for transportation investment priorities for the next 24 years. A number of Federal and State statutes and regulations direct the content of the Plan and the process by which it is developed. Regional planning initiatives also affect the priorities of the Plan. A few of the key statutes, regulations, and initiatives are described below.

Fixing America's Surface Transportation Act (FAST Act). The FAST Act was enacted on December 4, 2015. The FAST Act replaces MAP-21 and continues the performance-based planning and programming stipulations enacted in MAP-21, which requires MPOs to implement a performance- based approach in the scope of the Metropolitan Transportation Planning process. The FAST Act includes requirement to:

1) Support the economic vitality of the metropolitan area by enabling global competitiveness, productivity, and efficiency;

2) Increase the safety of the transportation system for motorized and non-motorized users;

3) Increase the security of the transportation system for motorized and non-motorized users;

4) Increase accessibility and mobility of people and freight;

5) Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between (regional) transportation improvements and State and local planned growth and economic development patterns;

6) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;

7) Promote efficient system management and operation;

8) Emphasize the preservation of the existing transportation system;

9) Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and

10) Reduce or mitigate stormwater impacts of surface transportation; and

11) Enhance travel and tourism.

Infrastructure Investment and Jobs Act (IIJA). In November 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL) totaling $1.2 trillion in authorize spending over a five-year period. The legislation addresses transportation programs related to streets and roads, bridges, passenger and freight rail, public transportation, ports, airports, the electric grid, water systems and broadband internet service. New guidelines are being developed to address the programs and include priorities for the administration such as infrastructure for a low-carbon economy to reduce air pollution, greenhouse gases and to improve water quality. This RTP/SCS addresses the Bipartisan Infrastructure Law and its priorities.

Sustainable Communities and Climate Protection Act of 2008 (SB 375). SB 375 requires that California's 18 MPOs, including MCAG, include an integrated Sustainable Communities Strategy (SCS) as part of the RTP/SCS. In essence, SB 375 requires the alignment of three major components within the regional transportation planning process – land use planning, transportation planning and funding, and State housing mandates – to reduce greenhouse gas (GHG) emissions from cars and light trucks. An SCS must be based on realistic planning assumptions; consider adopted general plans and spheres of influence; and consider natural resources and farmland. It must be internally consistent with the transportation and financing elements of the RTP and consistent with the adopted Regional Housing Needs Allocation. Finally, an SCS must be able to achieve the GHG reduction target established by the California Air Resources Board.

California Global Warming Solutions Act of 2006 (AB 32) and 2016 (SB 32). AB 32 requires that GHG emissions within California must be at 1990 levels by the year 2020. AB 32 identifies GHGs as specific air pollutants that are responsible for global warming and climate change, and it directs the California Air Resources Board (ARB) to implement the regulatory and market mechanisms necessary to achieve the specified reductions in GHG emissions. These efforts include reducing emissions through land use and transportation planning. SB 32 extends the reductions of GHG emissions required by AB 32 by specifying a GHG reduction of at least 40 percent below 1990 levels by the year 2030. SB 32 also authorizes ARB to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions. ARB is directed to carry out the process to achieve GHG emissions reductions in a manner that benefits the state's most disadvantaged communities.

Title VI of the Civil Rights Act of 1964. This law prohibits discrimination on the basis of race, color or national origin by recipients of federal funds such as state and local government agencies. Additionally, Title

VI imposes obligations on recipients of federal funds to take affirmative action to assure, among other things, "that no person is excluded from participation in or denied the benefits of the program or activity on the grounds of race, color, or national origin." These prohibitions against discrimination were later supported by additional state and federal actions including Presidential Executive Order 12898 on environmental justice (EJ), which requires that federal agencies and recipients of federal funding "identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations."

The California Complete Streets Act of 2008. This law requires cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users, including bicyclists, pedestrians, transit riders, children, older people, and disabled people, as well as motorists. It complements existing State policy, which directs Caltrans to "fully consider the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products."

Measure V. Measure V was passed by voters in November 2016 to implement a 30-year, ½ cent transportation sales tax in Merced County. Funds were provided for the following categories: Local, Eastside Regional, Westside Regional, and Transit. Measure V is estimated to generate approximately $18 million per year and $540 million over the course of the measure's lifetime.

Clean Air Act Amendments (1990). Pursuant to Section 176 (c)(4) of the 1990 Federal Clean Air Act Amendments (CAAA), Metropolitan Planning Organizations (MPO) such as MCAG must demonstrate that the RTP/SCS conforms to the applicable State Implementation Plan (SIP). This process is described in the Federal Transportation-Air Quality Conformity Rule. The purpose of conformity is to ensure that regional transportation planning and programming remain consistent with state and local air quality planning efforts to expeditiously achieve and/or maintain the health-based National Ambient Air Quality Standards (NAAQS). Specifically, the following activities/tests are required to be documented when making conformity determinations of regional transportation plans in Merced County:

1) Expeditious Implementation of Transportation Control Measures Test (Conformity Regulation, Section 93.113)
2) Emission Budget Test (Conformity Regulation, Section 93.118)
3) Transportation Plan is financially constrained (Section 93.108)
4) Interagency Consultation and Public Participation Procedures (Section 93.110)

California Environmental Quality Act (CEQA). CEQA directs governmental agencies to consider the cumulative regional impact, and analyze the environmental consequences, of proposed projects. Development of the RTP/SCS then requires a program-level environmental impact review of the collection of projects it contains. MCAG is designated as the lead agency to prepare the environmental review of the collection of projects.

National Performance Management Rule (2017). FHWA published a Notice of Proposed Rulemaking to propose national performance management measure regulations to assess the performance on the National Highway System, Freight Movement on the Interstate System, and the Congestion Mitigation and Air Quality Improvement Program, as required by the FAST Act.

California Transportation Plan (CTP) 2050 (2021)**.** The CTP 2050 is a long-range plan that aims to meet California's future mobility needs and reduce GHG emissions. It defines goals, performance-based policies, and strategies to improve mobility and enhance quality of life. The California Transportation Plan 2050) is a policy framework that provides a common vision for the future of the state's transportation system. The CTP 2050 is a roadmap for making effective, equitable, transparent, and transformational transportation decisions

in California. The CTP 2050 is a product of an open and collaborative approach with the State's transportation partners and stakeholders, and is the result of an extensive, multi-faceted public engagement process that responds to federal and state laws and regulations regarding public engagement.

Senate Bill 743 (SB 743). On September 27, 2013, Governor Brown signed Senate Bill 743 (Steinberg, 2013). Among other things, SB 743 creates a process to change analysis of transportation impacts under CEQA. Historically, environmental review of transportation impacts focused on the delay that vehicles experience at intersections and on roadway segments. That delay is measured using a metric known as "level of service," or LOS. Mitigation for increased delay often involves increasing capacity (i.e. the width of a roadway or size of an intersection), which may increase auto use and emissions and discourage alternative forms of transportation. Under SB 743, the focus of transportation analysis will shift from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks and promotion of a mix of land uses.

RTP/SCS Goals and Objectives

Seven "Vision Themes" provide the foundation for the plan and its Goals and Objectives:

- Provide a good system of roads that are well maintained, safe, efficient and meet the transportation demands of people and freight.
- Provide a transit system that is a viable choice.
- Support full-time employment with livable wages – i.e. support job creation & economic vitality.
- Preserve productive agricultural land/maintain strong agricultural economy and the quality of life that goes with it.
- Support orderly and planned growth that enhances the integration and connectivity of various modes of transportation.
- Support clean air and water and avoid, minimize or mitigate negative impacts to the environment, including from greenhouse gases.
- Identify funding to operate and maintain the existing and future transportation system.

Goals and Objectives

The following goals and objectives cover both short-term and long-term actions. Goals are listed alphabetically.

1. **Active Transportation (Bicycle & Pedestrian):** A regional transportation system for bicyclists and pedestrians. Create a safe, connected, and integrated regional transportation system for bicyclists and pedestrians.
   - 1.1. Develop and construct bike and walkway facilities in communities where non-motorized systems do not currently exist.
   - 1.2. Promote the development of policies that expand bike and pedestrian facilities for all residents.
   - 1.3. Maximize state and federal active transportation funding opportunities for local and regional project delivery.
   - 1.4. Prepare and/or update a regional active transportation/non-motorized plan every five years.
   - 1.5. Develop and construct walkway facilities in urban areas and other communities where pedestrian systems are currently lacking.
   - 1.6. Actively pursue pedestrian related funding sources to implement local and regional plans.

1.7. Identify local match funding opportunities for state and federal active transportation grants.

2. **Air Quality:** Achieve air quality standards set by the Environmental Protection Agency (EPA), and the State Air Resources Board.

   2.1. Coordinate transportation planning with air quality planning at the technical and policy level.

3. **Aviation:** Provide a fully functional and integrated air service and airport system that complements the countywide transportation system.

   3.1. Maintain daily commercial airline service to a major metropolitan airport.

   3.2. Work with local agencies to ensure compatible land uses around existing airports to reduce noise conflicts.

   3.3. Maintain alternative modes of transportation to and from local airports.

   3.4. Support local agencies in the development and improvement of local airports.

   3.5. Participate in Valleywide efforts to explore the feasibility of electric aviation as a regional transit alternative between urban centers and rural communities.

4. **Energy:** Reduce usage of nonrenewable energy resources for transportation purposes.

   4.1. Increase public transit and carpooling/vanpooling and bicycling/walking to support population growth.

5. **Goods Movement:** Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

   5.1. Provide an adequate regional road system for goods movement.

   5.2. Support the creation of a multimodal goods movement network.

6. **Highways, Streets, and Roads:** Provide a safe and efficient regional road system that accommodates the demand for movement of people and goods.

   6.1. Maintain safe and efficient operations on all regionally significant roads.

   6.2. Identify and prioritize improvements to the regional road system.

   6.3. Use the existing street and road system in the most efficient possible manner to improve local circulation.

   6.4. Monitor the impact of development on the regional road system.

   6.5. Utilize and maximize the effectiveness of the countywide transportation sales tax measure to expedite the delivery of local and regional transportation improvements.

7. **Land Use Development Patterns and Strategies:** Provide economical, long-term solutions to transportation problems by encouraging community designs that encourage walking, transit, and bicycling.

   7.1. Innovative land use and transportation planning.

   7.2. Plan future roads to accommodate land uses at a regional level.

   7.3. Plan streets that are pedestrian friendly, encourage bicycle trips and the use of mass transportation.

   7.4. Preserve productive farmland and land that provides habitat for rare, endangered or threatened species.

   7.5. Ensure Goals and Policies that are consistent at both the regional and local levels.

8. **Outreach and Coordination:** Provide a forum for participation and cooperation in transportation planning and facilitate relationships for transportation issues that transcend jurisdictional boundaries.

   8.1. Assist jurisdictions in local transportation planning.

8.2. Promote consistency among all levels of Transportation Planning.

8.3. Coordinate with regional agencies.

9. **Passenger Rail:** Provide a rail system that offers safe and reliable service for passengers.

   9.1. Expand intercity passenger service on the Amtrak San Joaquin route.

   9.2. Establish new commuter rail service provided by the Altamont Corridor Express (ACE) to Sacramento and San Jose.

   9.3. Establish a High-Speed Rail system connecting Merced to the Bay Area and Southern California.

10. **Reduce Project Delivery Delays:** Efficiently use available transportation funding to expedite delivery of transportation improvements within the region, and delivery of the Measure V expenditure plan.

   10.1. Continue to pursue all forms of federal and state grant funding for implementing multimodal and safety improvements.

11. **Reliability & Congestion:** Achieve a significant reduction in congestion on the National Highway System. Improve the efficiency of the surface transportation system

   11.1. Improve congestion monitoring systems.

12. **Safety for all Roadway Users:** Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

   12.1. Assist member jurisdictions in local safety planning.

   12.2. Improve safety performance monitoring systems.

   12.3. Coordinate with regional agencies.

13. **Smart Infrastructure:** Coordinate, monitor, and integrate planning and programming for intelligent transportation system (ITS), smart infrastructure, demand-responsive transportation, and automated vehicles.

   13.1. Develop Smart Corridor plans in key corridors to maximize effectiveness of existing facilities including the provision of real-time roadway information to travelers regarding traffic conditions and travel alternatives

   13.2. Update the Merced Region's ITS projects list.

   13.3. Support investments in non-capacity ITS improvements such as traffic signals and synchronizations.

14. **Social Equity and Environmental Justice:** Promote and provide equitable transportation and housing options for all populations and ensure that all populations share in the benefits of transportation improvements.

   14.1. Coordinate with local agencies to ensure disadvantaged communities in Merced County are provided equal access to mobility options/opportunities.

   14.2. Coordinate with regional agencies, e.g., transit providers to ensure disadvantaged communities in Merced County are provided equitable access.

15. **Sustainable Communities***:* Reduce per capita greenhouse gas emissions through compact growth and alternative transportation strategies. Protect and enhance the natural environment. Support vehicle electrification and the provision of electrification infrastructure in public and private parking facilities and structures. Support a vibrant and sustainable regional economy. Maximize the use of Regional Early Action Planning 2.0 funds to implement and advance efforts to reduce per capita greenhouse gas emissions.

   15.1. Prioritize infill and growth in existing communities.

15.2. Prioritize funding for complete street projects on existing corridors.

15.3. Explore funding sources to incentivize jurisdictions.

15.4. Re-evaluate project selection criteria to better harmonize with sustainability goals.

15.5. Prioritize vanpools and ridesharing.

15.6. Emphasize and explain "co-benefits" of implementing SB 375 in addition to meeting GHG reduction targets

15.7. Enhance the existing public participation process.

15.8. Enhance existing transit services.

16. **System Preservation:** Maintain the existing transportation system in a state of good repair.

16.1. Administer and expeditiously implement the Measure V Expenditure Plan

16.2. Improve pavement monitoring programs.

16.3. Coordinate with regional agencies.

17. **Transit:** Provide an efficient, effective, coordinated regional transit system that increases mobility for urban and rural populations, including transportation for disadvantaged persons.

17.1. Meet all transit needs that are **determined to be** "reasonable to meet."

17.2. Increase transit ridership at a rate that exceeds annual population growth rate.

17.3. Promote citizen participation and education in transit planning.

17.4. Promote transit ridership to and from Yosemite National Park from each of the gateway state highway corridors.

18. **Transportation Financing:** Develop and support financing strategies that provide for the continuous implementation of the Regional Transportation Plan projects and strategies.

18.1. Develop and adopt policies that will provide adequate funding resources for all transportation modes and strategies..

18.2. Assist jurisdictions in pursuing state and federal funding opportunities.

Performance Framework

The 2022 RTP/SCS goals are supported by a number of measures, which quantify and describe the performance of the RTP/SCS. Many were used during the public outreach process to help citizens, stakeholder groups, and advisory committees understand the trade-offs across the different potential policy choices (i.e., scenarios) that informed the development of the RTP/SCS. **Chapter 9** and **Appendix L** presents the performance measure results for Scenario 3: Connect & Conserve Merced County (the "Plan") compared to the Scenario 1: Baseline.

Mobility & Accessibility

- New project vehicle miles traveled (VMT)
- Percentage of new households within walking distance (0.5 miles) of a transit stop
- Vehicle Miles Traveled (VMT) growth (2005-2035)
- 2035 Vehicle Miles of Travel (Total VMT)
- Average trip length – commuter vehicle trips
- Pedestrian/bike daily mode share percentage

System Preservation

- New highway and local road costs resulting from new development (miles)

Sustainable Development Pattern

- Total acres of new development
- Acres of farmland converted
- Overall residential density of new development

Economic and Community Vitality

- Housing mix by type for new development
- Overall residential density of new development
- Total households
- Jobs/Housing Balance

Social Equity

- Housing mix by type for new development
- Environmental justice representation
- Average household income required to afford new single-family housing
- Average household income required to afford new multi-family housing
- Total households
- Total households within 0.5 miles of transit
- Total households within 0.5 miles of two or more buses per hour

Health & Safety

- Meets federal health-based emission budgets

Environmental Quality

- CO2 emissions per household of new development (tons/year)
- GHG reduction target compliance (2035 meets 14 percent reduction of 2005 baseline conditions)

Reliability & Congestion

- Congested Vehicle Miles of Travel
- Vehicle Hours of Delay

Forecasts

The 2022 RTP/SCS relies on regional forecasts of future demographics, travel demand, and transportation funding as key components of the planning process. Land use and transportation investment strategies are informed by these forecasts.

Demographics

Growth forecasts were developed based on a number of sources, including the California Department of Finance population and household forecasts. The Merced regional forecasts were developed specifically for the preparation of the 2022 RTP/SCS in (per Federal MPO Planning Regulations and Senate Bill 375). Demographic forecasts are presented in **Chapter 5**.

Transportation Demand Model

The travel demand model used by MCAG for future travel forecasts is focused on Merced County and its cities and communities. Detailed land use and transportation network inputs are included for Merced County jurisdictions. The model does consider and forecast travel beyond Merced County's borders, but areas beyond the County are represented in a simplified manner.

The travel demand model is validated, meaning that it has successfully "forecast" observed travel patterns using current (2015) transportation and land use inputs.

Financial

Revenue forecasts were developed through meetings and coordination efforts with MCAG's member agencies and Caltrans. These revenue projections satisfy federal requirements to achieve costs were accounted for through available and expected funding over the life of the program (24 years).

The RTP provides projections for local, state, and federal funds, and distinguishes between formula and competitive funding sources. Formula funds by definition are systematic and derived based on funding cycles specific to each member agency. Competitive funding, such as grant funding programs, which are less certain, were based on past performance by MCAG's member agencies, program applicability, and an assumed capture rate based on Merced County's proportion of population and state-maintained centerline miles of roadway relative to other MPO regions' and/or statewide counties. The 2022 RTP/SCS financial revenue forecast identifies several key funding sources, including: Measure V, SB 1, and SB 132. Through the passage of Measure V, Merced County became a Self-Help County, which will increase its ability to leverage additional federal and state discretionary funding. Future revenue projections are presented in **Chapter 6**.

3. Existing Conditions

Merced County is part of the San Joaquin Valley located in the Central Valley of California and consists of about 2,000 square miles of predominantly flat topography drained by the San Joaquin River and its tributaries. The area is nestled between the Sierra Nevada and Diablo mountain ranges. Santa Clara and San Benito Counties are to the west, Mariposa County to the east, Stanislaus County to the northwest, and Fresno and Madera counties to the southeast.

Merced County is one of the richest agricultural regions in the United States. The combination of rich flood plains, climate, and irrigation systems creates an ideal environment for agribusiness. According to the California Department of Conservation's California Farmland Mapping and Monitoring Program (2016), Merced County has 600,358 acres of important farmland, and an additional 552,632 acres of grazing land, totaling 1,152,990 acres of agricultural land (approximately 91% of total land in Merced County). Between 2014 and 2016, 2,915 acres of agricultural land were converted. Merced County's agricultural commodities grossed approximately $3.4 billion in 2020.

About 40,000 acres of wetlands in the center of the Merced County support one of the most concentrated waterfowl habitats in the western United States. The principal waterways in the County are the San Joaquin River and its largest tributaries, the Merced and Chowchilla rivers; the Bear, Owens, and Mariposa creeks in the eastern portion of the County; and the Los Banos and San Luis creeks in the west.

Demographics

Merced County and the San Joaquin Valley have historically grown at a faster rate than the rest of California, and will likely continue to do so. MCAG prepares and maintains population and employment forecasts for use in regional planning. The population and employment forecasts reflect the growth that is anticipated to occur during the next 24 years within Merced County, its cities and communities. Included in this growth are new employment centers near major highways (including Amazon near Interstate 5), and the University of California (UC) Merced campus expansion.

Between 2010 and 2015, the population of Merced County increased by approximately 6 percent. This growth is higher than the growth for the State of California (3 percent). The City of Merced is located along SR 99, and accounts for the majority of Merced County's population at 31-percent. Los Banos is located east of Interstate 5 along SR 152 and SR 165, and accounts for 14-percent of the County's population. The City of Atwater is located along SR 99, and accounts for 11-percent of the County's population. Demographic forecasts are presented in **Appendix J** and **Chapter 5.**

It should be noted that the COVID Pandemic may have slowed growth between 2019 and 2022.

Demographic forecasts are presented in **Chapter 5**.

Regional Transportation System

Merced County is served by a multimodal transportation system that incorporates roadways, railways, airports, and multiuse paths to facilitate the movement of people and goods throughout the region. Interstate 5 and State Route 99 provide the primary connection to major cities within Merced County, and link the county to other parts of California and beyond. Given the importance of agriculture and agritourism to Merced County, these two facilities are the highest priority both for access and goods movement. Transit service by national, regional, and local providers are available as alternatives to vehicular travel for individuals who choose not to, are unable to, or do not have access to, a personal vehicle. Due to the rural nature of Merced County, with widely distributed populations and dispersed land use patterns, commuting by a mode other than motor vehicle can be challenging. A multimodal transportation system offers the most diversity and flexibility for a strong economy, sound environment, and a livable community. The regional transportation system should provide links between various modes, and should work in concert to meet the goals of the 2022 MCAG RTP/SCS Plan. There is no single mode or solution that can meet the region's transportation needs. This section describes existing conditions of the regional transportation system for all transportation modes.

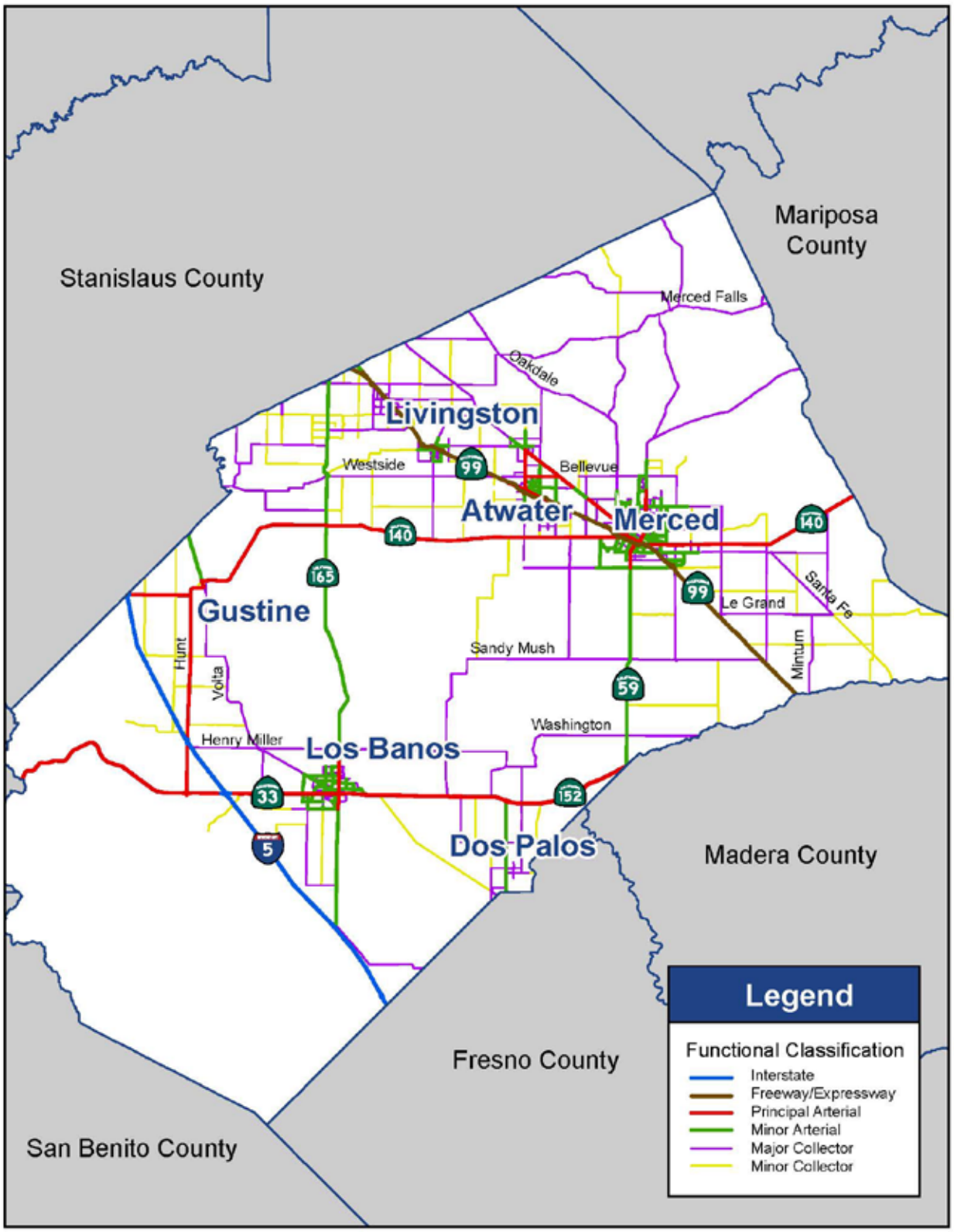
Highways, Streets, and Roads

MCAG has designated a regional roadway network which is the fundamental component of transportation in Merced County. It provides the basic network for the movement of people and goods. Regional roads are used by nearly all travel modes including automobiles, ridesharing (carpools and vanpools), transit buses, paratransit, trucks, bicycles, and pedestrians, and provide important connectivity for aviation. Each roadway's role in the transportation network is defined by its functional classification as shown in **Figure 3.1.**

The regional roadway system consists of State and Interstate Highways, as well as local routes which connect urban areas and other major activity centers. Facilities that are not included in the regional road system are considered to primarily serve local transportation needs.

Most of the identified needs relate either directly or indirectly to the system of highways, streets, and roads that are part of the regional road system. The personal automobile is the method by which most travel occurs, in terms of time, cost, mileage, or trips. However, other modes – including transit, goods movement, and bicycle – are also dependent on the road system. Preserving the viability and capacity of this system is vital to the region's economy and quality of life. As such, roadway maintenance and pavement management are crucial aspects in planning for the future of the Merced region's roadway system. Additional information on the state of good repair needs within Merced County are presented in **Chapter 4**

Figure 3.1 – Functional Classification



Recent Roadway Projects

The sections below highlight recent roadway projects that further the goals and objectives of both the current proposed Regional Transportation Plan.

SR-99 Livingston Median Widening

The SR-99 Livingston Median Widening increases the capacity of the mainline from four to six lanes from 0.8 mile south of the Hammatt Avenue Overcrossing to the Merced/Stanislaus county line. The project was initiated with a Project Study Report, funded by MCAG, the County of Merced, and the City of Livingston. Later phases were funded with Caltrans Interregional Improvement Program (IIP) funding.

The first segment/phase consists of widening SR-99 to three lanes within the median in the northbound direction between. The additional lane will be needed to accommodate traffic growth, which is anticipated to exceed existing capacity. The additional capacity will reduce congestion and the potential for accidents associated with congested traffic areas.

The programming for construction of this project was approved in the 2018 STIP. Construction is funded by the SB1 Trade Corridor Enhancement Program, State Route 99 Bond Savings, and MCAG's $5.5 million RIP. The project is in construction and work is expected to be complete in Summer/Fall of 2022.

The southbound segment/phase is programmed for construction with Caltrans IIP funding in the STIP. The construction contract for this southbound segment/phase was awarded in March 2022.

SR-99 Mainline Reconstruction Through Atwater and Merced

The Caltrans State Highway Operation and Protection Program (SHOPP) funded the reconstruction of SR-99 mainline segments through Atwater and through Merced with 40-year-life continuous reinforced concrete pavement (CRCP). The segment through Atwater should be completed in Winter 2022, and the segment through Merced should be completed in Spring 2023.

Campus Parkway, Phases 2, 3, and 4

Campus Parkway is a new expressway that provides direct connection from SR-99 on the east side of the City of Merced to U.C. Merced. The Campus Parkway includes a separated multiuse path for pedestrians and bicyclists.

Phase 1, which was funded by Federal, State, and local monies, was the construction of the first leg of the expressway northward from the Mission Avenue Interchange to Childs Avenue. Phase 1 was completed in early 2011.

In Spring 2017, California Senate Bill 132 was enacted and provided $100 million for the Campus Parkway Project. Phases 2 and 3, which extends the new expressway to Yosemite Avenue, are under construction and will be completed this year. The remaining funds will pay for Phase 4, which will be work between Yosemite Avenue and U.C. Merced.

The reason the Merced Region was able to secure state funding is that is the eastern component of the Merced Loop System. One goal for the Merced Loop System is to provide direct expressway access from the State Highways to Castle and U.C. Merced so as to prevent more congestion and associated emissions on local circulation routes through and near residential areas.

Atwater-Merced Expressway (AME) Phases 1B & 2

The Atwater-Merced Expressway (AME) has three main phases. The AME Phase 1A Interchange and first expressway leg to Green Sands Avenue was implemented using local funds for environmental and design,

regional share of State funds for right-of-way, and State Route 99 Bond funds for construction. The new SR-99 Interchange eliminated major safety and design problems with the existing on- and off- ramp configurations.

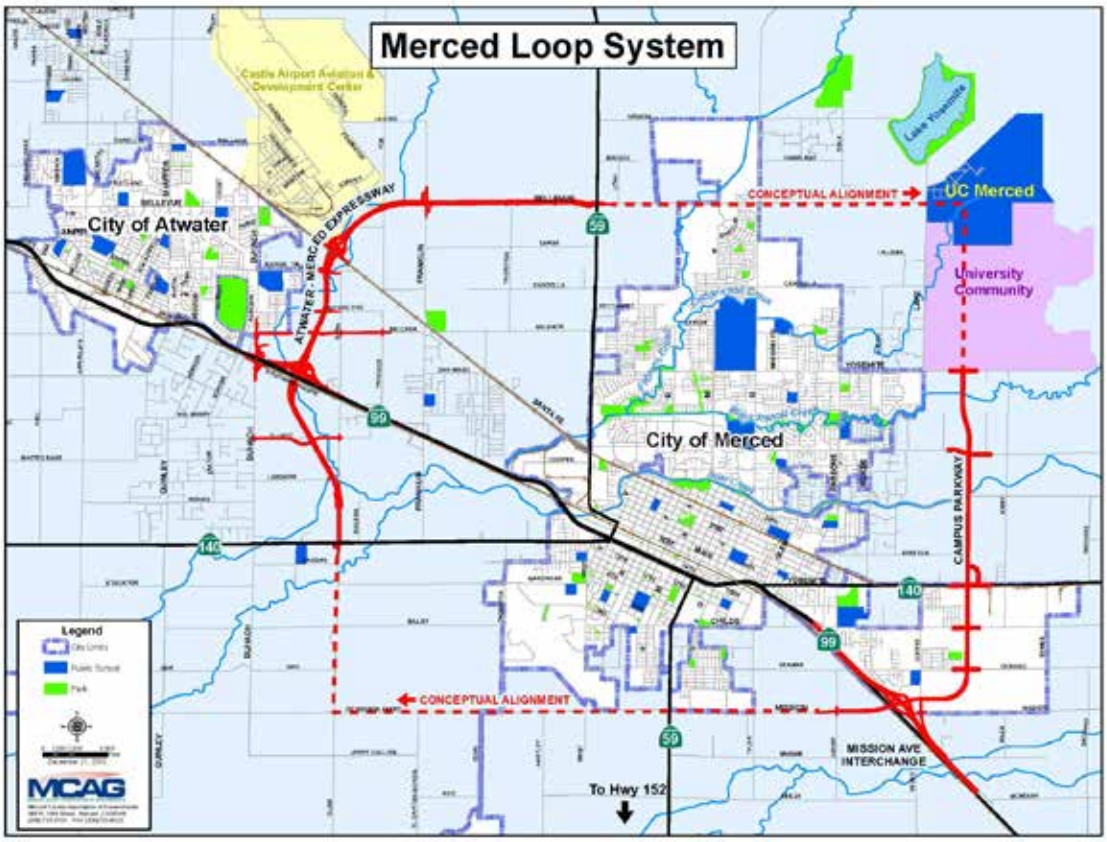
MCAG had programmed $29.67 million RIP in FY 24/25 (in 2020 STIP and carried over into 2022 STIP) to help pay for construction of this AME Phases 1B & 2 project, which is the topmost regional priority. AME Phase 1B will extend the leg to Santa Fe Drive, which will then provide the direct expressway connection from SR-99 Mainline to Castle. Castle was once a U.S. Airforce Base, but since December 2006, is under the ownership of Merced County, who plans to develop Castle into a major manufacturing / intermodal hub. Phase 2 will further extend the AME to Bellevue Road, which provides access to U.C. Merced.

To further the development of Castle as a viable intermodal hub, it is critically important to build the AME Phase 1B and to widen SR-99 through Atwater and Merced to accommodate the freight trucks hauling goods to Castle to be possibly transported by rail. The County of Merced has recently entered into a partnership with Patriot Rail to establish a rail district at Castle Commerce Center, making the site a focal point for the movement of freight by rail and future economic development.

Planned and unfunded is AME Phase 3, which is the expressway southward from the Phase 1A Interchange to connect with SR-140.

The AME is the western part of the Merced Loop System, as shown in **Figure 3.2**, to connect to U.C. Merced. The eastern part is the Campus Parkway, which as noted above is currently being built, provides connection from SR-99 to U.C. Merced. An intent of the Merced Loop System is to provide direct expressway access from the State Highways to Castle and U.C. Merced so as to prevent more congestion on local circulation routes and associated emissions affecting nearby homes.

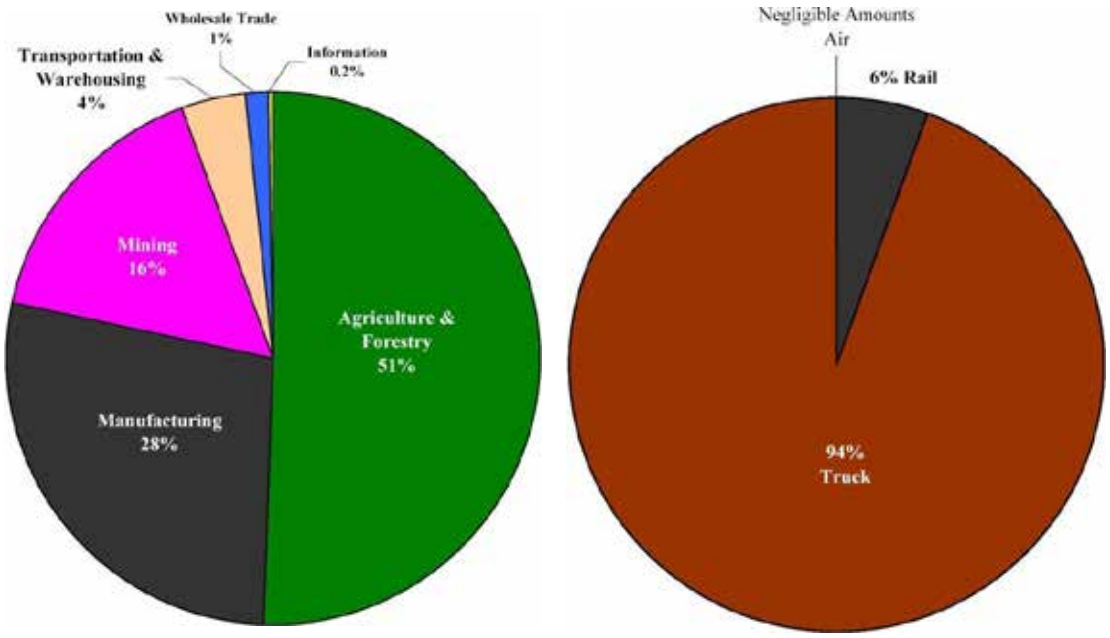
Figure 3.2 – Merced Loop System



Goods Movement

Merced County's economic vitality relies heavily upon the efficiency of freight transportation, also known as "Goods Movement." Movement of goods throughout the region is accomplished by trucking, railroads, air freight, and pipelines. The overwhelming majority of the tonnage, 94%, is moved by trucks. Rail accounts for about 6% of the total, while air is less than 0.1% as shown in **Figure 3.3**.

Figure 3.3 - Freight Commodities and Distribution by Mode for Merced County



As shown in the pie charts, most of the freight transport for Merced County involves agricultural and forestry goods being moved by trucks

In 2020, Merced County's farm commodities generated $3.4 billion, up from $2.6 billion in 2008. Agriculture remains Merced County's largest employer, and according to research at UC Davis, $1 billion in value added from agricultural production and processing results in a total of $2.63 billion of economic benefit to the state economy.

Freight is transported from, to and within the San Joaquin Valley predominantly by the following modes: trucks, rail, and air. Trucking is the most commonly used mode for transporting freight. Trucks are used for being the most economical and for having the widest network for transloading (at docks or to/from distribution centers or to other modes) and for regional deliveries. Commodity movement by this mode is a major cause of street and highway surface failures (necessitating a high level of street and highway network maintenance), poor air quality, and worsening congestion.

Heavy trucks damage roads much faster than do automobiles. Because of the high level of truck travel, streets and highways are subject to rapid deterioration and failure. A fully loaded truck (80,000 pounds) has a significant impact on a roadway. The American Association of Highway officials conducted road tests that establish that the passage of approximately 9,600 cars equal the effect of one fully loaded truck on the roadway.

In addition to the deterioration of streets and highways throughout the Valley, emissions from trucks have an adverse effect on air quality. Many trucks use diesel fuel, which releases more emissions than regular unleaded gasoline. By their very size and slower speeds, trucks lead to congestion and delay. Major highway corridors in Merced County experience relatively high truck traffic, between 20-30 percent of the Annual Average Daily Traffic. While current legislation focuses on implementing Traffic Control Measures (TCMs) for passenger vehicles, TCMs do not specifically address truck usage.

Travel along the major corridors in Merced County is mostly in a north-south direction. State Route 99 and Interstate 5 are the primary north/south interregional routes used by trucks. State Route 99 is a significant interregional route of state-wide importance and carries most of the truck-transported agricultural goods. Other state highways and county roads play major roles in distribution as well. State Routes 152, 140, 33, 59 and 165 provide the major east-west connections between Interstate 5 and Route 99.

Presently, there are over 30 trucking companies located throughout the county. There is also an undetermined number of businesses that provide their own trucking, including retail outlets such as department stores and grocery stores.

Merced County has both agricultural and light industrial demands for trucking. The needs of individual growers and manufacturers to get their goods to major terminals, marketplaces, and processing centers are met by trucks. In addition, trucks are used as feeder lines to distribute goods from major rail, water, and air centers. Because many Valley agricultural products are destined for world markets, efficient freight access at California export points must be ensured.

Future Issues for Trucks

The movement of goods by trucks is essential for the economy of Merced County. Trucking will continue to be the most flexible form of goods movement and will continue to add to highway congestion. Trucks, like cars, have an adverse effect on air quality, and the presence of trucks carrying hazardous materials increases the probability of dangerous spills. Air and rail services are under-utilized for the movement of goods.

Cooperative efforts are needed between the trucking industry, the driving public and local officials to assess the impacts that trucks have on local streets, and to create regulatory guidelines for trucks in urban areas. Alternative transportation modes for the movement of goods should be explored and used when possible – although agricultural products need to be collected from throughout the rural area and trucks on local roadways will continue to be the best way to deliver these products. These include improved inter-modal freight transfer facilities and access at major airports and rail terminals, and the inter-modal linkage of trucks on rail as a technique for reducing truck traffic on selected highway corridors. Castle is planned by the County of Merced to be a major manufacturing hub with multimodal capabilities attributed to the runway, access to railroad, and prospective direct access to SR-99 Mainline. (See discussion of the Atwater-Merced Expressway project below).

As the Valley develops to support a more mobile and service-oriented population, the need for east-west travel corridors will become crucial. Special attention must be given to the regional routes to keep them in a serviceable condition and to avoid major reconstruction costs.

Investing in the means to limit future congestion will be economically and environmentally beneficial to the county. With freight tonnages and values projected to significantly expand by 2035 (FHWA Freight Ops and Management), planning for this future growth will be instrumental to regional, state, and national vitality.

The first segment of the new Campus Parkway facility is currently being constructed, and the remaining segments connecting to the UC Campus will hopefully be funded for construction.

Rail

Trains are considered the most feasible mode for longer-haul, out-of-region (transcontinental) transport.

There are two railroads that operate through Merced County: the Union Pacific (UP) and the Burlington Northern Santa Fe (BNSF). These two rail lines provide for the transportation of freight, while the BNSF also hosts Amtrak passenger service in and through Merced County.

Union Pacific Railroad

The Union Pacific (UP) Railroad currently operates 84 miles of track within Merced County. UP tracks are located both east and west of the San Joaquin River. They move freight in and through the county. UP will host the future ACE commuter rail service.

Burlington Northern Santa Fe Railway Company

The Burlington Northern Santa Fe (BNSF) Railroad maintains 43 miles of track within Merced County. Freight trains and Amtrak share these rail lines. Amtrak has one station located in the City of Merced on the BNSF right-of-way. BNSF has a rail spur on the Castle Airport business park through which businesses on Castle are receiving deliveries.

Rail Freight Service

The BNSF and UP Railroads provide freight movement in and through Merced County on a daily basis. Freight is moved by rail cars of several types, these include: flatbed cars, piggy-back cars, refrigerated produce cars, fuel tanker cars and regular stock box cars. Several industrial/manufacturing and agricultural companies within the county use rail freight service.

In February 2022, Merced County and private short-line operator Patriot Rail agreed to establish a rail district at Castle Commerce Center, making the site a focal point for the movement of freight by rail and supporting future economic development. The rail district, located near the southeastern corner of Castle, will enhance the ability of agricultural producers, manufacturers and other enterprises from throughout the San Joaquin Valley to ship and receive products via the BNSF railroad mainline, which runs adjacent to the site. A rail spur from the BNSF lines currently connects to Castle, and Patriot Rail will develop additional infrastructure to facilitate enhanced rail freight service from the location.

Future Issues for Rail

Rail freight service within Merced County is expected to increase due to higher costs associated with trucking. Merced will also have more industry in the future that should require more rail freight service. Consideration of increased rail transport should include grade-separations (approximately $15 million each) so that increased rail-haul frequencies do not lead to worse congestion for other modes.

Active Transportation (Bicycle & Pedestrian)

Practical and available active transportation options are key to achieving a successful regional transportation network. For Merced County, transportation facilities that encourage bicycle and pedestrian use will help to meet emissions reduction standards by reducing the amount of vehicle trips and vehicle miles traveled. Active transportation options also contribute to reduced traffic congestion, improved air quality, and a better overall quality of life within the county. The following sections describe existing active transportation facilities in Merced County.

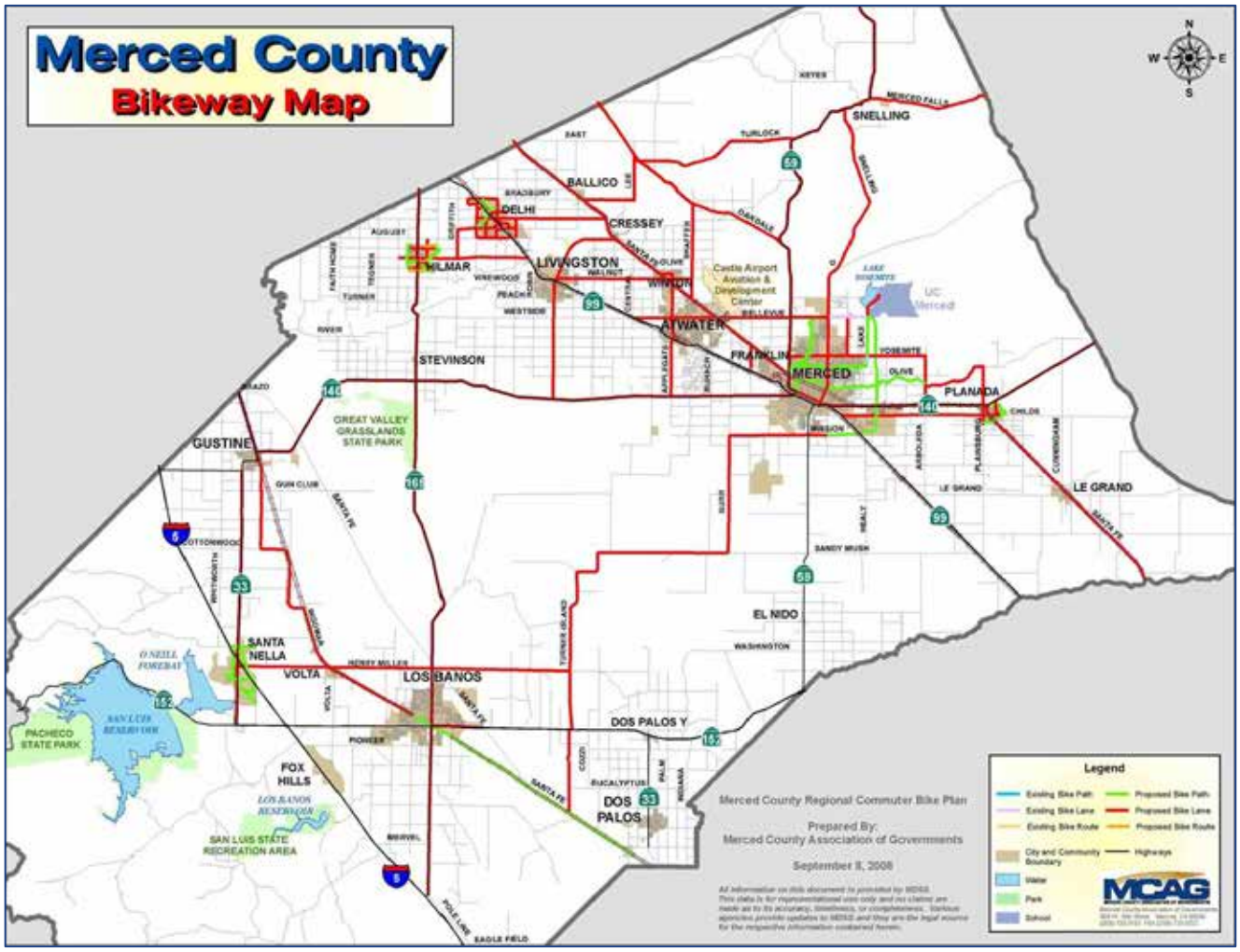
Existing Facilities

Bicycle and pedestrian facilities include bike paths and lanes, as well as sidewalks and shared-use paths. Sidewalks are generally provided in urban or residential areas to ensure safe pedestrian access. Support facilities, such as bicycle parking racks, are important elements to considered when planning and implementing such facilities. Existing bicycle and pedestrian facilities within Merced County include the following:

- Class I Bike Paths provide a separate right-of-way designated for the exclusive use of cyclists or pedestrians.
- Class II Bike Lanes provide restricted right-of-way bike lanes on the street.

- Class III Bike Routes provide a right-of-way generally designated by signs and shared with pedestrians or motorists.
- Pedestrian walkways are most often made up of a city sidewalk system and bike paths.

Figure 3.4 – Merced County Bikeway Map



The City of Merced has the most extensive bike path system in the county. As shown in **Figure 3.4**, Merced's bikeway system consists of Class I paths and Class II bike lanes. Most of the Class II bike lanes run within the urban area of Merced, while the Class I bike paths run along portions of Black Rascal Creek, Bear Creek, Cottonwood Creek, and Fahrens Creek. An additional Class I path runs northward alongside Lake Road between Yosemite Avenue and Lake Yosemite, outside of the city limits. Few bicycle facilities exist in the cities of Atwater, Dos Palos, and Gustine.

Merced's pedestrian networks include the popular bike paths along Black Rascal and Bear creeks, and the city sidewalk system. Bicycles are allowed on all rural highways.

Regional Bicycle Plan

MCAG adopted a Regional Bikeway Plan in 2008. The intent of the plan is to connect to major destinations throughout the County as well as bikeway systems in the local communities. Additionally, the plan calls for safety in all aspects, development and maintenance, and ongoing bicycle education.

Regional Non-motorized Transportation Plan

This plan is currently under development and will identify opportunities to improve and increase non-motorized travel options and expand access to public transportation systems across the County. These efforts should help to reduce vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions consistent with MCAG's 2022 Regional Transportation Plan/Sustainable Communities Strategies (RTP/SCS). The Non-motorized Transportation Plan will be completed by early 2024.

Local Bicycle Plans

The City of Atwater adopted a Bicycle Plan in 2004, which identifies the need to create a balanced, safe, and efficient circulation system. Policies included in the plan range from developing programs to reduce over-dependence on the automobile to creating incentives for developers to provide pedestrian/bicycle transportation systems.

The City of Dos Palos adopted a Bicycle Plan in 2008. The plan documents that the City recognizes the need to encourage bicycle travel for both transportation and recreation. The goal of the City is to create and maintain, through the plan, an integrated system of bikeways.

The City of Gustine adopted a new Active Transportation Plan (ATP) in December 2021. The ATP and General Plan identify the need to provide a safe system of bikeways and pedestrian facilities as alternatives to vehicular travel, and establish and maintain routes and other facilities that are designed to ensure safety while being aesthetically pleasing.

The City of Livingston adopted a Bicycle Plan in November 2005. Both the Bicycle Plan and Livingston's General Plan identify the need to establish a safe and efficient transportation system that provides adequate access throughout the city, as well as routes that provide alternatives to motor vehicle travel.

The City of Los Banos updated their Bicycle Plan in 2018. It is the goal of the plan to create and maintain an integrated system of bikeways, provide safe and convenient travel for bicyclists throughout the city, and encourage travel for both transportation and recreation. Additionally, the City's General Plan documents that the development of bikeways will be given equal priority to vehicle traffic as part of the multimodal transportation system.

The City of Merced adopted a Bicycle Plan in 2013. It is the goal of the City of Merced to create and maintain an integrated system of bikeways, which provide safe and convenient travel for bicyclists throughout the plan area. Additionally, the City's General Plan states that it will encourage area employers to promote bicycle use through incentive programs or other means, and will continue to support, whenever feasible, local efforts to promote cycling. The City of Merced created a Bicycle Advisory Commission in 2009 to involve bicycle users in bicycle planning efforts and transportation-related bicycle activities.

Plans and Projects Supporting Active Transportation

In recent years, non-motorized travel has become more popular due to several factors: energy savings, health advantages, and environmental enhancement. Active Transportation is expected to continue to increase in popularity due to public awareness of health and environmental benefits and as more facilities providing safe and attractive routes for walking and cycling.

The following sections outline several recent and ongoing projects in the Merced region that promote walking and bicycling as well as public transportation.

Walkable Winton Town Center Plan and Community Plan

This project will help to create a vibrant and walkable town center in the unincorporated community of Winton. This plan analyzed existing transportation challenges faced by the community, identified corresponding opportunities, and offered recommendations for physical improvements to the Winton Way corridor and the

various modes of transit that serve the project area. The recommendations to encourage a walkable Winton have been incorporated into the Winton Community Plan, which was adopted on May 11, 2021.

Winton Community Park Restoration

A new walking path with energy-efficient lighting, new picnic shelters and playground will be installed. Local high school students will plant trees and design and install new park benches. This project will be funded through the Department of Transportation's "Clean California Local Grant Program."

Regional Multi-Use Path Feasibility Study (Atwater-Merced)

The purpose of this study was to determine the feasibility of the construction of a multi-use regional path that connects the bicycle networks of the cities of Atwater and Merced in Merced County. This project would support the need of network connectivity between the local networks within Merced County as outlined in the Merced County Regional Bicycle Transportation Plan that lists a planned regional path along Santa Fe Drive between Atwater and Merced. As no bicycle facilities currently exist linking the two cities, this project would create a safe route of travel for bicyclists commuting between the two. MCAG used Planning, Programming and Monitoring (PPM) funds to pay for the study. Implementation of the project is pending as of early 2022.

Regional Multi-Use Path Feasibility Study (Los Banos)

This study was conducted to determine the feasibility of the construction of a multi-use regional path in the City of Los Banos connecting Merced College to the local bikeway network. This project would support the need of network connectivity within the City of Los Banos as outlined in the City of Los Banos Bicycle-Pedestrian Plan that lists a planned Class I path along Pacheco Blvd from Badger Flat Rd to Merced College Campus Drive. As no pedestrian facilities currently exist within the study area, this project would create a safe route of travel for students commuting to and from the college. MCAG used PPM funds to pay for the study. Measure V funds have since been programmed for project development, right-of-way and construction phases for this multi-use path. Los Banos will likely apply for an ATP grant to supplement construction funding.

Campus Parkway Multi-Use Path

Adjacent to the Campus Parkway, a Class I divided/protected multi-use path is being constructed to improve pedestrian and bicyclist movement along the corridor. Phases 1 and 2 have been completed. When Phase 3 is complete, it will provide non-motorized connectivity from Highway 99 to UC Merced.

Land Use Developments Supporting Active Transportation and Transit

The Merced region has seen a marked increase in the number of developments and development proposals which, by virtue of their density and/or their mixed-use characteristics, facilitate walking, biking and transit use. Such projects also reduce vehicle use and vehicle miles traveled, which is an important objective of the Merced RTP/SCS. The following sections summarize a number of recently approved projects throughout the region that support the goals of the 2022 RTP/SCS.

The City of Atwater has two prominent examples of recently approved developments that align with the 2022 RTP/SCS Preferred Scenario. The two projects are on either side of Redwood Ave north of Bellevue Road. These developments are walking distance to schools (Elmer Wood Elementary School and Atwater High School), City Hall, and commercial businesses (Food-4-Less, Save-Mart, and a planned Grocery Outlet) as well as City parks.

Renderings of Atwater Family Affordable Housing

One project is the **Atwater Family Affordable Housing Development**, comprising 120 residential units on 6.231 acres (19.26 units/acre) illustrated in the upper image at right. This affordable housing complex will also help Atwater meet its Regional Housing Needs Allocation.

ATWATER MIXED USE DEVELOPMENT
(Two 3-Story Buildings)
Lower floors for commercial use
Upper two floors for 52 residential units = 23.64 units/acre

The second project (image at right) is the **Redwood Mixed-Use Development**. This project will be built on a 2.2-acre parcel and will accommodate two 3-story structures, each of which will have commercial uses on the ground floors and residential units on the two upper floors. There will be a total of 52 residential units in this development, with a housing density of 23.64 units/acre.

The City of Los Banos is the site of two apartment development proposals that exceed the residential density goals of Preferred Plan**: Mercey Springs Apartments** (approved for 150 units at 30 units/acre) and the **F Street Multi-Family** project (approval pending for 16 units at 17 units/acre). These demonstrate the City's ongoing effort to support sustainability strategies. Los Banos is also actively promoting infill projects, such as duplexes and mixed-use in the City's central area.

The **Tierrasanta Villas Apartments** in the City of Livingston entails construction of 80 apartments on 3.98 acres (20.1 units/acre) plus supporting services. In total the project will consist of six buildings: 5 buildings will be apartments affordable to lower-income households; one building will contain a community center for residents, space for staff and leasing offices, a childcare facility, and other activities. The project represents infill development, and will be within walking/bicycling distance to schools, shopping, and commercial businesses.

Rendering of Tierrasanta Villas Affordable Housing

Since the adoption of the 2018 RTP/SCS, the *City of Merced* has approved or is into process of approving ten multifamily housing projects, all of which exceed the target density of the Preferred Plan. Some Merced higher density residential projects include mixed-use, such as neighborhood commercial and a medical clinic. Several recently approved commercial mixed-use developments include office, retail and lodging: Mixing such complementary uses can also encourage a shift to walking.

The following paragraphs profile recently completed or under construction land use projects in the City of Merced that are supportive of active transportation, public transit and reduced vehicle use.

Merced Station

Merced Station, which opened in August 2021, is a mixed-use facility geared toward college students. It features 15 residential buildings with 270 units. The Merced Station plans include a large clubhouse with study spaces, a fitness facility, and a pool. The property offers high speed internet, a market, a coffee shop and a casual dining facility. Secure bicycle storage is offered at each residential building. Located on Yosemite Avenue near Lake Road, Merced Station has transit access to both UC Merced and central Merced. https://www.mercedstation.com/

Axis At Compass Pointe built in 2019, is a two-story, 96-unit apartment community located on Horizon Avenue in Merced. The property comprises 12 residential buildings totaling 95,808 rentable square feet. The complex is situated on a 4.87-acre site, giving the project a residential density of approximately 20 units per acre. The apartment homes feature one-, two-, and three-bedroom floor plans with an average size of 1,000 square feet. The property includes a clubhouse, fitness center, and leasing office. This complex is also in walking distance to existing transit services, both The Bus and CatTracks. (Image source: https://www.axisapartment.com/)

Axis at Compass Point

The Tioga, in downtown Merced at 1715 N Street, was built in 1928 as the "Hotel Tioga." The Tioga recently underwent a $15 million renovation project intended to attract working professionals to rent modern living spaces and be part of Merced's growing downtown community. The Tioga is a prime example of new mixed-use development in downtown Merced. The second location of the Tioga-Sequoia Brewery of Fresno will operate on the ground floor, where there is also additional retail space. A cafe and fitness center will also be added. The 70 residential units opened for occupancy in April 2020. The Tioga is within approximately one block of three transit stops, one of which is the Merced Transportation Center. The Tioga is also in close proximity to the planned ACE rail station. (Image Source: https://www.thetiogamerced.com/gallery/)

The Child's Court Apartments is a higher-density affordable housing development now under construction in the City of Merced at Childs Avenue and B Street. The site density is 24.3 units per acre. It is within walking/bicycling distance to an elementary school, health services, and Farmers Market. The Project has also provided a new electric transit bus that will increase frequency of Route M4 with a new bus stop (bus pullout) on B Street.

Yosemite Crossings a mixed-use project, began construction in 2021. The 21.4-acre site is located at the northeast corner of G Street and Yosemite Avenue in Merced. The project site is bound to the north by vacant land, to the east by single family residential uses, open space, a ponding basin, and a proposed Valley Children's facility, to the south by Yosemite Avenue, and to the west by G Street. This project is also located in close proximity to Merced College and Mercy Hospital, as well as multiple existing transit services. While primarily commercial, the project includes 96 apartment units. Other uses include retail, restaurants, a gas station, offices, and a four-story hotel.

Transit

There are a variety of transit options available in Merced County, including bus and rail service. The level of transit service available to Merced County residents has increased regularly since transit was introduced to the area in 1974. Historically, public transit was developed in response to the basic transportation needs of Merced's transit-dependent population and maintained that standard of service. Transit is growing in importance for more segments of the population.

Existing System

In 1996, Merced County Transit – "The Bus" – began providing a consolidated public transit service throughout Merced County. Prior to that time, public transit service had been provided by some of the individual jurisdictions. The Transit Services Consolidation Agreement established a Joint Powers Agreement (JPA) between Merced County and the cities of Atwater, Dos Palos, Gustine, Livingston, Los Banos, and Merced. The County of Merced, through the Department of Public Works' Transportation Division – Merced County Transit, administered and managed the consolidated services until July 1, 2010. At that time, administration of the service was handed over to the Transit Joint Powers Authority (TJPA) for Merced County. The Bus serves the entire County of Merced with fixed route, demand response or Dial-A-Ride service, and subscription bus service for commuters. Transit services are provided by a private operator under contract to the TJPA. The Authority is made up of the same eleven-member board of elected officials as the MCAG Board.

The Bus currently runs 15 fixed routes and provides paratransit service throughout Merced County with operating hours of 6:00 AM – 8:00 PM on weekdays and 8:00AM – 6:00PM on weekends.

Seven (7) of the fixed routes run in the City of Merced. These routes service major corridors such as G Street, M Street, R Street, V Street and Highway 59, with the routes extending as far north as Yosemite Avenue and as far south as Childs Avenue. There are also connection points to major commercial areas, healthcare facilities, the flea market, Merced College, UC Merced, and low-income service providers, such as the Merced County Human Services Agency.

In Atwater, there are two (2) fixed bus routes that provide service along Winton Way, Bellevue Road, and Buhach Rd. These routes also provide connections to shopping centers, like Target and Wal-Mart, and health-care facilities, such as the Castle Clinic.

There are six (6) fixed commuter routes that connect Atwater, Delhi, El Nido, Livingston, Los Banos, Planada, Turlock (Stanislaus County) and Winton to the City of Merced.

In addition to fixed route service, The Bus offers a curb-to-curb transit service through Paratransit to eligible individuals. Passengers must go through an approval process to utilize this service.

Microtransit – The Bus launched a pilot microtransit service in the communities on the Westside of Merced County in May 2021. The service, called The Micro Bus, is a shared, on-demand, public transit system that provides passengers transportation within the communities of Los Banos, Dos Palos, Gustine, and Santa Nella. Passengers in these areas can select from a network of 'virtual stops' in their community for pick up and drop off, along with their preferred departure time. Passengers can see all of the virtual stop locations and book a ride on The Micro Bus by downloading the app on their smart phone for free, going online at www.mercedthebus.com/themicrobus, or by calling The Bus customer service line.

This current pilot program replaced the following services:

- General Dial-a-ride service in the city of Los Banos; and
- Two deviated fixed routes provide transit service to the rural communities of Dos Palos, Gustine, and Santa Nella. These services would deviate from the route up to ¾ of a mile to make pick-ups for both ADA and general riders at a higher fare.

UC Merced Partnership

The Bus runs a route between UC Merced and downtown with 45-minute-headways, which is paid for by UC Merced. As part of this agreement, UC Merced Students are able to ride any of The Bus's fifteen Fixed Routes for free.

CatTracks – UC Merced

CatTracks is a transit service for all UC Merced students, faculty and staff. UC Merced-affiliated riders only need to present their CatCard to the CatTracks drive in order to use the service. The fare for the general public is $2.00.

Merced College

In August 2019, The Bus and Merced College collaborated on an initiative to help students fulfill transportation needs related to their academic goals. The 'MC Bus 4 Me' program, which was voted and approved by the student body, charged students a $9.95 transportation fee at the beginning of every semester. This fee allowed students to ride any fixed route on The Bus throughout Merced County for free by simply showing their Merced College student ID card. The program at Merced College is similar to those at other community colleges throughout the state such as Modesto Junior College, Ventura College, Oxnard College and more. The Bus currently has ten fixed routes, which stop at Merced College's Merced and Los Banos Campuses 194 times per day. Students can catch a bus to campus at one of 238 bus stops located throughout the county.

Measure V Program Free Fare Program

In July 2021, MCAG Governing Board approved the expansion of the Measure V free fare program for seniors, veterans, and ADA-eligible riders on fixed-route bus services to also include paratransit, dial-a-ride, and microtransit services. The expansion of the free fare program means that veterans, seniors, and ADA-eligible passengers throughout the county now benefit from a completely free transit system, thus empowering them to travel independently throughout the region without having to worry about finding a way to pay for their bus fare.

Transit Electrification Investments

In November 2019, The Bus was awarded $2 million of FTA Funds for the purchase of five electric buses and their corresponding charging depots that will be installed at its maintenance and operations center in Merced.

On the eve of Earth Day 2020, the California State Transportation Agency announced that The Bus will receive more than $3.1 million in state funding for the purchase of three electric buses to transport Merced County residents.

In November 2020, the MCAG Governing Board approved the allocation of $500,000 of Measure V Transit funds for The Bus's purchase of zero-emission electric buses. The purchase will include five 40-foot battery-electric buses, charging depots, spare parts, special training, and the tools needed to maintain and operate the electric fleet and its charging components.

Unmet Transit Needs Process

MCAG annually monitors whether transit needs are being met for the citizens of Merced County, as is required by Section 99401.5 of the Transportation Development Act (TDA). The TDA governs the administration of the Local Transportation Fund (LTF). The TDA requires that the Regional Transportation Planning Agency (MCAG) make a finding, after a public hearing, that there are no unmet public transportation needs within a jurisdiction that can reasonably be met before it may approve LTF claims for streets and roads.

The RTP is the guiding document for the provision of transit services; therefore, any service implementation should be consistent with the RTP. The Transportation Development Act requires that prior to claim approval, an RTP consistency finding be made.

To determine if there are any unmet transit needs within the county, MCAG has established the Social Services Transportation Advisory Council (SSTAC). The SSTAC meets on a quarterly basis in various Merced County communities to hold noticed public meetings for interested and concerned citizens. Per Article 3.99238 of the TDA, the SSTAC has the following responsibilities:

- Annually participate in the identification of transit needs in the jurisdiction, including unmet transit needs that may exist within the jurisdiction of the council and that may be reasonable to meet by establishing or contracting for new public transportation or specialized transportation services or by expanding existing services.
- Annually review and recommend action by the transportation planning agency for the area within jurisdiction of the council which finds by resolution, one of the following: that (A) there are no unmet transit needs, (B) there are no unmet transit needs that are reasonable to meet, (C) there are unmet transit needs, including needs that are reasonable to meet.
- Advise the transportation planning agency on any other major transit issues, including the coordination and consolidation of specialized transportation services.

The Unmet Transit Needs Process has been a useful tool for identifying transit service deficiencies. The introduction of Saturday bus service resulted from this process, as have other alterations to the existing system.

Coordinated Transit Service Plan

The Coordinated Transit Service Plan (CTSP) is prepared in response to the coordinated planning requirements within the 5310 program. Federal transit law, as amended by MAP-21, requires that projects selected for funding under the Section 5310 program be “included in a locally developed, coordinated public transit-human services transportation plan” and that the plan be “developed and approved through a process that included participation by seniors, individuals with disabilities, representatives of public, private, and nonprofit transportation and human services providers and other members of the public”. The CTSP will be used as the region’s framework for establishing eligibility for projects to receive funding through various federal programs.

Other Transit Providers

Yosemite Area Regional Transportation System (YARTS)

Each year, the already substantial number of visitors to Yosemite National Park increases. Travel demand to and from the Park is tremendous during peak periods. To plan better public transportation, counties that serve as access points to the park have formed a means by which they can more closely coordinate transit activities.

In 1999, a Joint Powers Agreement (JPA) for the provision of transit service in the greater Yosemite Region was formed by Mariposa County, Merced County, and Mono County. The YARTS JPA is governed by a three-member Board of Commissioners. A county supervisor is appointed to the board of commissioners from each of the member counties. This board determines transit service plans, operating and capital budgets, transit fare structure, and capital improvement programs. In May of 2000 YARTS

began providing transit service throughout the Yosemite Region. YARTS' only year-round route runs along SR 140 between Merced and the Yosemite Valley Visitor Center.

The YARTS JPA has adopted the following mission:

> *YARTS will provide a positive alternative method of access to Yosemite National Park, carrying visitors, employees and residents. YARTS service is not intended to replace auto access or trans-Sierra travel, but is intended to provide a viable alternative that offers a positive experience, emphasizing comfort and convenience for riders while guaranteeing access to the Park.*

YARTS contracts with MCAG for staffing to administer and manage the transit service. MCAG performs all accounting and billing functions for the JPA, administers construction contracts for bus stops, and prepares outreach materials including schedules, route maps, and pamphlets.

VIA Trailways

VIA Charter Lines provides charter services to private groups as well as limited regional fixed-route service from Merced to Yosemite National Park. VIA maintains a fleet of approximately 20 coaches and five large vans. VIA also operates many of YARTS' buses.

Greyhound Bus Lines

The Greyhound Trailways bus lines are a combined national bus carrier providing service in and through the county. Bus depots are located in Merced and Los Banos. Some of the scheduled buses leaving these two depots will make drop-offs at other cities within the county.

Social Service Transportation Providers

Various social service providers throughout Merced County offer specialized transportation service for their clients. These services tend to address the needs that public transit cannot reasonably meet, including evening service, non-emergency medical transport, and job training transport, to name a few.

Merced County Area Agency on Aging

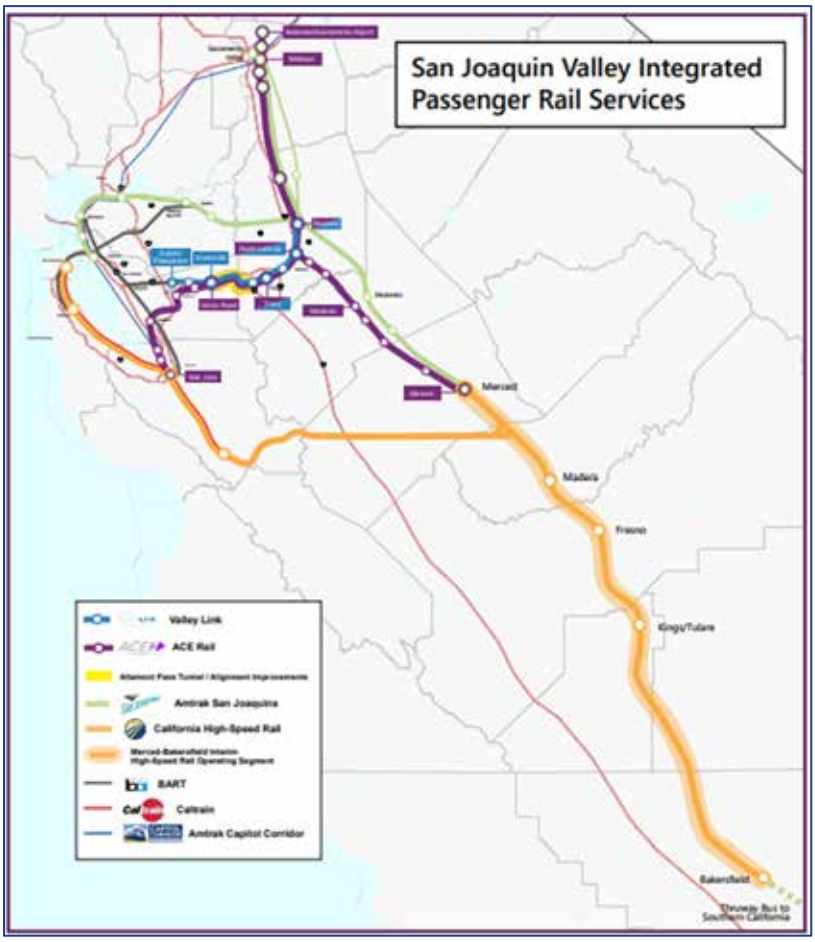
The Merced County Area Agency on Aging (AAA) Senior Transportation Program provides a funding subsidy to disabled and older adults, 60 years of age or older. A limited number of free bus passes are available to seniors ages 60-61; this group is not eligible for free transit under the Measure V funding, which provides free rides to seniors 62 and older on all fixed route services.

Passenger Rail

Traditionally, the Central Valley has served as the backbone of California's north-south road and rail traffic. This key transportation asset between Northern and Southern California not only serves a high volume of freight service but also intercity passenger service. The San Joaquins, one of the most successful passenger services in the United States, provides connections between the Central Valley, Bay Area, and Sacramento over its 363-mile route. Today, several key improvements are being made to turn this into the cornerstone of a statewide network.

Merced County is uniquely positioned to be at the center of California's rail revolution and the new statewide high-performance passenger rail system. At the completion of the full system, Merced will be the central hub that allows travelers to reach nearly any region of the state. This system can be viewed as three separate rail services, but by connecting in Merced, they work in concert as one comprehensive service **(Figure 3.5)**. For the purposes of this document and for ease of discussion of existing conditions, these services will be first be looked at separately.

Figure 3.5 – Merced County: Nexus of Interregional Rail Service



Amtrak San Joaquins

The Amtrak San Joaquins service is an intercity passenger line running from Bakersfield to Oakland and Sacramento. Currently, the San Joaquins are the only passenger service operating in Merced County. Before the COVID-19 pandemic, the San Joaquins operated seven daily roundtrips, five to Oakland and two to Sacramento. While the trains are operated by Amtrak, the majority of equipment and rolling stock is owned by Caltrans. The San Joaquins are governed by the San Joaquin Joint Powers Authority (SJJPA) with administrative, planning, and procurement duties performed by the San Joaquin Regional Rail Commission (SJRRC).

Prior to the COVID-19 pandemic, Merced was the fifth busiest station on the San Joaquins route (fourth busiest if not including Amtrak Thruway Bus transfers). Merced Station is also the current crew change point for the route. Improvements have been made to the station, including the construction of a second platform and a new larger parking lot. Improvements have also been made to the trains, with new motive power in the form of the EPA Tier IV compliant SC-44 Charger Locomotives. New rolling stock, the Venture cars, are anticipated to enter service in the near future.

Future improvements to the San Joaquins will attempt to accelerate trains and increase frequency across the entire route. A variety of potential strategies are being considered. One key project in development is a joint project between the SJJPA/SJRRC and the BNSF Railway to explore double track improvements between Merced and Stockton. This project will not only provide major benefits to existing freight rail by removing bottlenecks, but will also facilitate up to twelve daily roundtrips of the San Joaquins. The additional roundtrips are anticipated to begin service after further improvements, including the completion of track improvements between Stockton and Natomas.

The Amtrak San Joaquins partners with YARTS to provide cross-ticketing for passengers bound for Yosemite National Park. A second Thruway Bus service from Merced is anticipated to commence in late 2022, connecting Merced, Los Banos, Gilroy, and San Jose. This second service will provide a key transportation link over Pacheco Pass and will connect the Westside to rail connections at Merced and Gilroy.

The San Joaquins have been chosen to be the interim operator of high-speed rail service once the Initial Operating Segment between Merced and Bakersfield opens. The SJJPA is in the process of completing negotiations with the California High-Speed Rail Authority to prepare for this role. To perform these duties, the SJJPA has begun work on the Merced Intermodal Track Connector Project (see below). In the long term, the San Joaquins will terminate in Merced to meet High-Speed Rail services running south and west. The San Joaquins will grow to be a high-performance intercity service, primarily serving as a northern extension of the high-speed rail service. Ultimately, the SJJPA aims to achieve hourly trips between Merced and Sacramento.

Merced Intermodal Track Connector (MITC)

The Merced Intermodal Track Connector Project or MITC will create an elevated rail link between the BNSF Railway and the Union Pacific Railroad. This will allow the San Joaquins to terminate in Downtown Merced with direct cross-platform connections to rail services and transit. This track connector will most likely parallel State Route 59. The SJJPA has identified this as a critical project for future operations. This project is still early in development and is anticipated to begin the environmental clearance process and early design in late 2022 or early 2023. Construction is likely to be completed in late 2029.

Altamont Corridor Express (ACE)

The Altamont Corridor Express (ACE) is a commuter rail service currently operating from Stockton to San Jose. Today, ACE operates four daily roundtrips at peak commute times. ACE is owned and operated by the SJRRC.

ACE is currently undergoing a massive expansion in conjunction with the San Joaquins called Valley Rail. This long-term plan will connect ACE to Natomas in the north and Merced in the south. The extension will be constructed within the Union Pacific Railroad (UPRR) right-of-way. These improvements will allow for fast commuter service during peak hours and will provide faster and more fluid movement of freight trains off-peak. The southern extension will be constructed in two phases, the first from Lathrop to Ceres and the second from Ceres to Merced. The environmental impact report and 15% design documents for Ceres to Merced was approved and adopted on December 3, 2021. Three station sites have been identified in Merced County, in the cities of Livingston, Atwater, and Merced. Construction of the new extension is anticipated to be completed in 2029. At the present time, there is no planned increase in trips to San Jose. However, three additional roundtrips are planned to serve Merced to Natomas, with cross-platform connections to Bay Area-bound trains in Lathrop. Further service expansions may be added in the future.

Separate from Valley Rail are a host of other improvements to increase frequencies on the core ACE service between Stockton and San Jose. One of these is the construction of a new ACE terminus in Union City to provide a direct connection to Bay Area Rapid Transit (BART). One train from Merced is anticipated to serve this new terminus.

Livingston Station

Livingston Station will be constructed off of Main Street on UPRR and Caltrans right-of-way. At this time, parking will be constructed between the railroad and State Route 99. This station includes a center platform between the two proposed tracks.

Atwater Station

Atwater Station will be on Atwater Boulevard between Applegate Road/Winton Way and slightly east of 1st Street. Parking is largely between Atwater Boulevard and the railroad; however an additional parking lot will be constructed at the northwest corner of Atwater Boulevard and 1st Street. This station includes a center platform between the two proposed tracks.

Merced Station

Merced Station, or Merced Multi-Modal Station, will be at 15th Street and R Street. This will be in the heart of Downtown Merced and located less than a block from the Merced Transportation Center (Merced Transpo), where all intercity bus services and most regional bus services originate from. Parking will be between 15th Street and the railroad. This station will feature a side platform.

In the future, this new station will provide a location for all passenger services with cross-platform connections. It will serve as the terminus for ACE, the San Joaquins, and California High-Speed Rail.

Merced Layover and Maintenance Facility

The Merced Layover Facility will be located west of State Route 59, accessible by under-utilized industrial tracks. This facility will provide maintenance services to ACE trains and future San Joaquins trains. The facility could potentially be used to service High-Speed Rail rolling stock as well.

This facility will utilize the existing lead track but also will add four new storage tracks that will connect to the maintenance facility. This will include administrative offices, crew facilities, light vehicle repair facilities, parts storage, fueling facilities, wayside power, and train cleaning areas.

California High-Speed Rail

The California High-Speed Rail project is a statewide effort to bring high-speed rail to California. Phase 1 of the project is underway, which will construct a system from Anaheim to Merced and San Francisco. Phase 1 has been further subdivided into various segments. The Initial Operating Segment, the first segment to receive service, will connect Merced to Bakersfield. This segment has been defined as a fully double-tracked, fully electrified rail line. Large portions are already under construction. The segment within Merced County will be entering design in 2022 with estimated final design approval in 2024. As previously stated, High-Speed Rail services will have cross-platform connections to ACE and the San Joaquins at the future downtown station, as well as access to transit options. The SJJPA is currently working on negotiations with the California High-Speed Rail Authority to move forward as the interim operator of high-speed service. Service is anticipated to begin in 2029.

The second segment in Merced County is the San Jose-Merced Section, sometimes referred to as the Valley-to-Valley Section. As the name suggests, this will connect Merced and the Central Valley to San Jose and the Silicon Valley via Pacheco Pass. This segment is nearing completion of the environmental clearance process.

Upon commencement of service, anticipated in 2029, Merced will become the central hub for rail transportation. Every San Joaquins train will meet one of the high-speed rail trains in Merced for seamless connections. Most ACE trains will also offer a direct connection for long distance commuters. From Merced, passengers will have access to twelve daily roundtrips on the San Joaquins to Oakland, Sacramento Valley Station, and Natomas. Future improvements will provide further connections north to Chico. ACE will provide connections to San Jose, Union City, Sacramento/Natomas, and, in the future, Chico.

Future Connectivity Planning

When the funding for implementing these rail projects in the Merced Region is identified, MCAG may apply for State Sustainability Planning Grant funding in combination with regional discretionary funding for the rail connectivity study, which will look at passenger rail access through multimodal means and State Route 99. This future study will aim to evaluate connectivity between different travel modes, to create an efficient regional and interregional travel network, including providing improved access to stations. Discretionary funding sources include PL, PPM, Local Transportation Funds, and potentially Measure V.

Aviation

The Merced region has five publicly owned, public-use airports: Gustine Airport, Castle Airport, Los Banos Municipal Airport, and Merced Regional Airport. Turlock Municipal Airport (O15) is located within the county but is owned by the City of Turlock, which is in Stanislaus County. In addition to the public use airports, there are eight privately-owned airfields located within Merced County, some of which allow public use.

Currently, each of the airport facilities in the county are meeting the basic aviation needs of the public. Based on forecasts for airport operations, none of the airports within the county will exceed operations capacity over the RTP implementation period.

Merced Regional Airport

Merced Regional Airport/Macready Field (MCE) is the only airport in Merced County that provides scheduled commercial airline, freight air cargo, and general aviation services. It is one of only three California airports where passenger service is supported by the Federal Essential Air Service (EAS) program. The airport is included in the National Plan of Integrated Airport Systems (NPIAS) and is classified as a Regional, Commercial Service - Non-Primary airport, which means it receives scheduled commercial air service and enplanes 2,500 or more, but less than 10,000, passengers a year. The airport is also contained in the California Aviation System Plan (CASP) and is classified as a Commercial Airport and is part of the San Jose/San Francisco Bay Area – Central Valley – Los Angeles Interregional Corridor.

Gustine Airport

The Gustine Airport (3O1) is classified as a Basic, General Aviation airport and is primarily used by private aircraft. Runway length at Gustine Airport is 3,200 feet, capable of handling multi-engine aircraft. Available hangar space is 11,500 square feet.

Los Banos Municipal Airport

The Los Banos Municipal Airport (LSN) is a Local, General Aviation airport used primarily by private aircraft. Runway length at the Los Banos Airport is 3,801 feet, capable of handling multi-engine aircraft. The Los Banos Airport has 32,000 square feet of hangar space.

Castle Airport

For approximately 50 years, Castle Air Force Base, located near the City of Atwater, was operated as a military airfield until its closure in 1995. The facility's primary mission was as a base for long-range bombers. The facility also served as a training facility for bomber and air refueling aircraft crews. Upon closure of Castle as a military base in 1995, the majority of the facility's property was transferred to the Castle Joint Powers Authority (CJPA) for the purposes of transforming the facility to a civilian airport. The CJPA members consisted of the cities of Merced and Atwater, and the County of Merced. In December 2006, all of the property was sold by the Air Force to Now it is owned and operated by the County of Merced. The current Castle Airport (MER) is currently classified as a Local, General Aviation airport. The size of the property is approximately 1,900 acres with 1,300 acres designated as airport property. The airfield, apron, and hangar areas cover approximately 1,100 acres, and 500 acres is for revenue-producing airport support.

4. System Preservation

A well-maintained transportation system that effectively facilitates private and commercial movement both locally and regionally is key to economic growth and sustainability. The condition of each transportation facility, from roadways and transit to pathways and bike lanes, impacts the relative usefulness of the mode it supports and ultimately effects alternative facilities. Overall, maintaining a "state of good repair" is a key component in determining regional transportation investments.

Per the National Performance Management Rule (NPMR), Caltrans and MPOs are required to establish targets for safety, bridge and pavement condition, air quality, freight movement, and for performance of the National Highway System and to use the performance measures to track their progress toward meeting those targets. For initiating the objective-driven, performance-based approach to planning, FHWA focused on three measures: 1. Safety; 2. Pavement and Bridge Condition; and 3. NHS, Freight and CMAQ. The safety performance metrics and targets were established by Caltrans and MCAG are described under Safety. The other performance measures and targets are still under development. However, several NPMR performance metrics including Congestion and Travel Time Reliability for passenger vehicles and heavy-duty trucks respectively were quantified in the 2018 RTP/SCS. Additional information on the NPMR performance measures and implementation schedules is presented in **Appendix V**.

Roadway Pavement Conditions

There are approximately 576 miles of roadways on the Regional Road system in Merced County and approximately 279 of those miles are State Highways. Caltrans has set aside funds for maintenance of theirsystem. The responsibility for maintenance on the remaining 297 miles of Regional Road system and the more than 2,000 miles of off-system roads rests with the seven local jurisdictions.

Streets and roads are degraded by the weight of traffic, particularly large trucks, and the stresses of temperature and moisture changes resulting from the weather. Routes traveled by large numbers of freight trucks will have significantly lower life spans and an accelerated need for maintenance, rehabilitation, and replacement. Due to the value and importance of roads to local and national economic vitality (supportive data to be found in the goods movement section of this report), preserving their condition and performance should be a priority. In addition, poor-quality streets and roads are costly to motorists and pose safety issues for cyclists and pedestrians. To keep the streets and roads in good repair requires substantial investment in transportation infrastructure and cost-effective maintenance strategies.

A typical local two-lane roadway costs approximately $2.6 million per mile to construct. The expected life of that facility is around 20-30 years if no preventative maintenance is applied during the life of that road. A critical concept in street and road maintenance is that while pavements deteriorate only 40 percent in qualityin the first 75 percent of their life, this deterioration subsequently accelerates rapidly, resulting in another 40 percent drop in quality in the next 12 percent of life.

Pavement quality, or Pavement Condition Index (PCI), is a measure of roadway pavement conditions. In addition, as roadway pavement conditions worsen, the cost to repair them increases exponentially. A Pavement Management Program (PMP) can identify pavements that are likely approaching accelerated decline, and can assist with planning and delivering efficient preventive maintenance. This makes a PMP a good tool for aiding local agencies with planning short- and long-term systemwide maintenance strategies tomaximize the impacts of expenditures on the system. A PMP has been developed and is being utilized by the local jurisdictions. **Table 4.1** provides existing pavement conditions (PCI), maintained centerline miles, and daily vehicle miles traveled (DVMT) for each member agency in Merced County. As shown, all Merced County jurisdictions have Fair to Very Poor pavement conditions, except for the City of Livingston. This suggests a great need for a system preservation effort in Merced County, especially as future conditions result in increases in DMVT throughout the region. Maintaining transportations in a state of good repair is a federal initiative and part of the NPMR (National Performance Management Rule). The implementation of Measure V and SB 1 have helped Cities and the County to fund numerous road maintenance projects to rehabilitate and protect the local and region's roadway network. More than two dozen road maintenance project are in included in the Tier 1 project list: **See Chapter 9, Table 9-2.**

Table 4.1 – Existing (2018) Pavement Conditions

Jurisdiction	Pavement Condition Index (PCI)	Condition	Maintained Centerline Miles	Daily Vehicle Miles Traveled (DVMT) (1,000s)
Atwater	66	Fair	96	210
Dos Palos	39	Very Poor	23	23
Gustine	55	Poor	22	15
Livingston	77	Satisfactory	47	67
Los Banos	59	Fair	127	184
Merced	55	Poor	270	615
Merced County (Unincorporated)*	45	Poor	1921	1469

PCI and Road Condition based on *PAVER Pavement Management System Summary Report (September 2018).*Prepared for MCAG by Dynatest North America, Inc. Centerline miles and DVMT data from Caltrans *Highway Performance Monitoring System (HPMS), 2018.*

Transit Operations and Cost

The state of good repair for transit systems can be measured by the effectiveness and efficiency of available transit services. Transit system reviews help to identify areas of unmet transit needs and areas of ineffective transit service. Transit farebox recovery (the revenue recovered in ride purchases) helps to give an idea of the efficiency of a particular transit service area. For example, if the farebox ratio is low, ridership levels maynot be high enough to justify the service. According to the Triennial Review of the Transit Joint Powers Authority (TJPA) of Merced County (2021), transit service in Merced County is evaluated on certain requirements based on three metrics:

- *Not Deficient*: An area if considered not deficient if, during the review, no findings were noted with the grantee's implementation of the requirements.
- *Deficient*: An area is considered deficient if any of the requirements within the area reviewed were not met.
- *Not Applicable*: An area can be deemed not applicable if, after an initial assessment, the grantee does not conduct activities for which the requirements of the respective area would be applicable.

The Merced County TJPA was not deficient in the remaining requirement categories, which include financial management and capacity, technical capacity, maintenance, Americans with Disabilities Act, procurement, project planning, and school bus service, among others.

Safety

According to the California Office of Traffic Safety, collisions in Merced County resulted in approximately 2,270 injuries or fatalities in 2019, ranking 9th out of 58 counties in California for the highest number of injuries and/or deaths per capita (In 2015 Merced ranked 26th). Of these injuries or deaths, 315 (or 14 percent) resulted from an alcohol involved collision, the 8th highest per capita out of California counties. A total of 63 (or 3 percent) involved a bicyclist, and 98 (or 4 percent) involved a pedestrian.

In 2019, Merced County had 2,270 injuries or fatalities due to collisions

Per the NPMR Caltrans has established metrics and targets for safety on the National Highway system withinMerced County. The Merced County safety targets for 2022 are presented in **Table 4.2**.

Table 4.2 – Merced County Safety Targets for 2022

Merced County Safety Targets for 2022				
Performance Target	**Data Source**	**5-Year Rolling Average (2016-2020) for Merced Region***	**Percent Reduction (2022)**	**Numerical Target (2022)**
Number of Traffic Fatalities	FARS	59.4	3.61%	57.26
Rate of Fatalities per 100 million VMT	FARS & HPMS	2.12	2.0%	2.08
Number of Serious Injuries	SWITRS	198.8	1.66%	195.5
Rate of Serious Injuries per 100 million VMT	SWITRS & HPMS	7.12	1.66%	3.61%7
Number of Non-Motorized Fatalities and Serious Injuries	FARS & SWITRS	22.3	3.61% (Fatalities) 1.66% (Serious Injuries)	21.78

Source: MCAG 2023 FTIP

Reliability

An important component of system preservation is ensuring travel time reliability. Travel time reliability measures consistency or dependability in travel times, and applies to both vehicular travel and transit systems, as well as freight carriers and air travelers. While travel time reliability does not directly addresscongestion issues, it plays an important role in traffic management and operational activities.

Based on four months of travel speed data collected for passenger vehicles and heavy-duty trucks in 2017, poor travel time reliability was indicated on SR-99 in Merced; on SR-59 and SR-140 in Merced; and, on SR 152 and SR 165 in Los Banos.

Travel Demand Management

The purpose of Travel Demand Management (TDM) programs is to reduce transportation demand by providing alternatives or programs to single-occupancy vehicle travel, with the ultimate goals of reducing congestion and increasing air quality and public health. Travelers can make more informed decisions aboutthe routes they choose or the time of day they travel if they have confidence in the information they have available on the reliability of the roadway or system. Since January 2014, the eTRIP Rule (Rule 9410), or theEmployer Based Trip Reduction rule, requires larger employers to establish a plan to encourage employees to carpool or use transit services to reduce single-occupancy vehicle trips. This RTP includes several projects and programs aimed at reducing single-occupancy vehicle use in the county, including participation in “dibs” rideshare promotion, membership in CalVans for vanpooling options, the ACE Train extension and other transit service improvements.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) utilize technology to increase the efficiency and safety of a transportation network. ITS manages traffic flow and helps to increase reliability by reducing the impacts andduration of incidents, as well as smoothing traffic flows to slightly increase roadway capacity without adding pavement.

Traditional components of ITS include advanced communications technologies that allow for information tobe shared between vehicles and infrastructure. This technology includes automated speed enforcement systems, digital travel time signs, and vehicle sensors at signalized intersections, among other features.

As vehicle automation becomes more advanced, communication between vehicles and infrastructure, and between vehicles themselves, will increase the ways in which ITS can be used to improve the transportation system.

MCAG has funded several traffic signals synchronization projects, including:

- City of Atwater's synchronization of congested city streets in close proximity to State Route 99. Synchronized are traffic signals on Winton Way, Applegate Road, Commerce Avenue, and Bell Drive.
- City of Merced's Phase 1 synchronization of signals along the G and 16th Street Corridors.
- City of Merced's Phase 2 upgrade of controllers and synchronization of thirty-four signals on much- traveled streets throughout the city.
- City of Los Banos' wireless synchronization of about fifteen signals along the congested Pacheco Boulevard / State Route 152 that traverses through the middle of the city.

5. Future Conditions

The ways in which the Merced County region grows over the next 24 years has implications for the transportation system that will be needed to accommodate this growth. Growth in regional population and employment numbers will affect commute patterns, mobility options, and increase overall travel. Managing this growth will need to consider the potential shift toward more technology-based travel options, including electric, autonomous, and shared vehicles.

Demographic Forecasts

The 2022 RTP/SCS relies on regional forecasts of future demographics, travel demand, and transportation funding as key components of the planning process, since land use and transportation investment decisionsare based on the region's growth forecasts. The forecasts were developed per the Federal FAST Act MPO Planning Regulations and Senate Bill 375. Key sources include:

- California Department of Finance (DOF) 2046 Regional Population Projection (July 2021)
- Woods & Poole 2046 Regional Employment Projection (2021)

Population, Housing and Jobs distribution data was developed by the University of Pacific (UOP) Center for Business & Policy Research and completed in 2016. The complete forecast for Merced County is included in **Appendix J** and summarized in **Appendix M**. Countywide population, household, and employment forecasts are presented in **Table 5.1**.

Table 5.1 – Merced County Regional Growth Forecast

Year	Population	Households	Employees
2019	280,441	80,412	84,400
2020	284,761	82,529	80,882
2025	298,184	90,704	90,442
2030	314,690	98,254	95,494
2035	330,805	103,600	100,533
2040	346,085	108,598	105,544
2045	359,888	113,137	110,530
2046	362,542	114,012	111,530
2019 - 2046	*82,101*	33,600	27,130
Growth %	*29%*	42%	32%

Population

From 2010 to 2019, Merced County's population grew by 23,641 (or 9 percent) to 280,441. This growth outpaced the growth California, which grew by 5 percent from 2010 to 2019. **Table 5.2** shows the population distribution within Merced County for year 2019 relative to year 2010, as well as future forecasts for 2046..

The City of Merced is located along SR 99, and accounts for nearly a third of Merced County's population at 31percent. Los Banos is located east of Interstate 5 along SR 152 and SR 165, and accounts for 15 percent of the County's population. Atwater is located along SR 99, and accounts for 11 percent of the County's population.

Between year 2019 and year 2046, the population of Merced County is expected to increase by approximately 82,000 persons to 362,542.

As shown in **Table 5.2**, by 2046, the City of Merced will increase in population by 29 percent, Los Banos by 32 percent, and Atwater by 29 percent. The majority of Merced County's population is Hispanic, accounting for approximately 60 percent of the total population in 2020.

Table 5.2 – Merced County Population Growth Trends

City	Recent Trend			Future Trend	
	2010*	2019**	2010-2019 Change	2046**	2019-2046 Change
Atwater	27,587	31,605	4,018	40,617	9,012
Dos Palos	4,904	5,566	662	7,064	1,498
Gustine	5,438	5,834	396	7,541	1,707
Livingston	12,733	14,767	2,034	19,093	4,326
Los Banos	34,548	41,173	6,625	54,408	13,235
Merced	77,080	86,119	9,039	111,156	25,037
Unincorporated	94,510	95,377	867	122,663	27,286
Merced County Total**	**256,800**	**280,441**	**23,641**	**362,542**	**82,101**

**US Census Bureau, ACS 5-Year Estimate*

***MCAG RTP/SCS Demographic Projections developed by TCAG, based on past forecasts and Department of Finance data 02/04/2022.*

Housing

The number of households in Merced County reached 80,412 units in 2019 and is expected to increase to approximately 114,012 by 2046 (42 percent growth). About one-third of the current housing stock is located inthe City of Merced and this proportion will hold in 2046. Most housing growth is expected to occur within incorporated Cities, all of which are expected to increase their housing stock by over 40 percent by 2046. The unincorporated portion of Merced County will see 37 percent growth. This increase is due primarily to the local availability of affordable housing and the proximity of Merced County to employment centers in Sacramento and the Bay Area, making the region a viable option for those priced out of other housing markets and willing to commute. The widespread adoption of telecommuting during the COVID-19 pandemic has also enabled more persons to work remotely from Merced County.

Between year 2019 and year 2046 Merced County is expected to see an increase of approximately 34,000 households to 114,012

As shown in **Table 5.3**, home sale prices are significantly below those of California as a whole, and less than half the cost of many Bay Area counties. Additionally, home sales prices in Merced County are below neighboring counties of Fresno, Stanislaus, and San Joaquin.

Table 5.3 – Housing Prices, 2021

County	Median Home Sales Price	Percent Difference from Merced
Merced	$367,220	
Fresno	$371,689	1%
Stanislaus	$440,563	20%
San Joaquin	$512,193	39%
Sacramento	$503,663	37%
Contra Costa	$695,110	189%
Alameda	$891,734	243%
Santa Clara	$1,253,400	298%
San Mateo	$1,247,073	339%
San Francisco	$1,230,797	335%
California	*$697,000*	*189%*

Sources: National Association of Realtors:
County Median Home Prices and Monthly Mortgage Payment (Nar. Realtor) For fourth quarter 2021.
Housing Inventory: Median Listing Price in California (MEDLISPRICA) | FRED | St. Louis Fed (stlouisfed.org)
for California in November 2022. Accessed April 14, 2022.

Employment

In 2019, there were approximately 73,000 employed residents within Merced County. Based on North American Industry Classification System (NAICS) data (OntheMap.ces.census.gov), the majority (13 percent)of the resident workforce within Merced County work in the manufacturing industry, and 12 percent work inthe agriculture industry or a related field. In addition, 17 percent of the total number of jobs held within Merced County, including non-county residents, are in the agriculture industry. Education services also

provides a significant portion of employment opportunities in Merced County, due in part to the presence ofUniversity of California (UC) Merced, located just northeast of the City of Merced.

Between year 2019 and year 2046, employment within Merced County is expected to increase by approximately 27,000 jobs to 111,500.

Jobs-Housing-Balance

The ongoing trend of commuters migrating to the Valley for housing while continuing to work in other marketshas historically led to a jobs-housing imbalance in Merced County. A jobs-housing balance is typically achieved when both the quality and quantity of housing options match the job opportunities within an area, with a resulting ratio exceeding 1.0, since there is more than one worker per household on average.

As of 2019, Merced County had approximately 84,400 jobs and 80,412 households, resulting in a jobs- housing ratio of 1.05 jobs per household. By 2046, Merced County is forecasted to have approximately 110,166 jobs and 117,838 households, resulting in a decrease in the jobs-housing ratio to 0.98.

The region must go beyond attempting to simply improve commuter travel times and develop policies to encourage, attract, and retain quality, higher-wage jobs through land use and fiscal decisions that develop

Merced County as a desirable location for employers and employees. Strategies to attract a mix of high-tech and industrial manufacturing jobs will rely heavily on providing a higher quality transportation infrastructure and more viable transportation options to make businesses more efficient, as well as providing community amenities that attract new businesses and a highly-qualified workforce. To support this, investments have started to be made in amenities such as downtown development projects, performing arts centers, and community parks. These efforts will take time to take root and produce meaningful results.

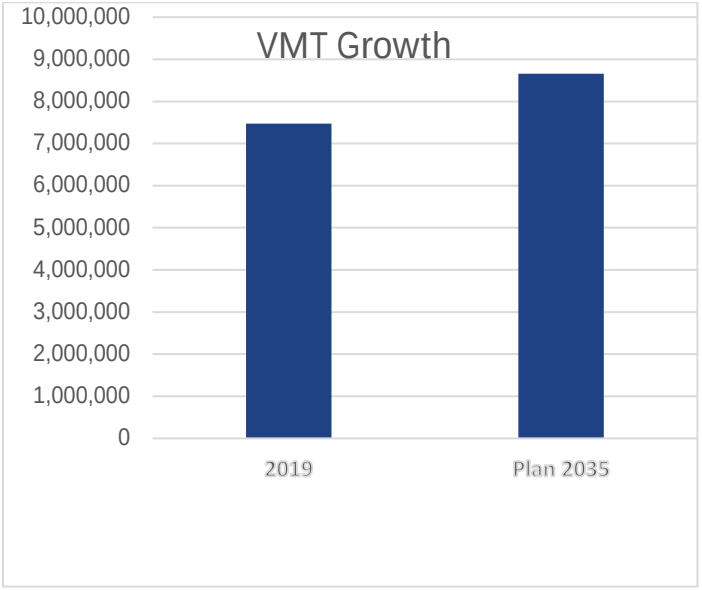
Travel Growth

With continued growth in Merced's cities, travel within and through the County will also continue to increase. Under the Plan, total daily vehicle miles traveled (VMT, or the sum of the length of all vehicle trips) will increase to 8,661,253 miles in 2035 compared to 7,475,157 in 2019. This is over 100,000 miles less than the anticipated VMT without implementation of the 2022 RTP/SCS (8,763,474 VMT under the No Project Scenario),

Performance measure results relating to travel growth within the Merced region is presented in **Chapter 8**.

Under future (2046) conditions, operations on the region's roadway network are projected to worsen along certain segments of SR 33, SR 59, and SR 165 in the City of Los Banos. In addition, the volume on Santa FeDrive between the Stanislaus County Line and SR 59 is projected to exceed its capacity. Due to population and employment growth, implementation of this Plan will result in an increase in VMT (even though the plan reduces VMT per capita) throughout the region by 2035. **Figure 5.1** presents the VMT forecast growth between existing and future conditions (2035) under the Plan.

Figure 5.1 – Future (2035) Vehicle Miles Traveled (VMT) Forecast



Commute Travel

Even with increases in the number of jobs within the county, it is likely that Merced County will continue to have a worsening jobs/housing imbalance as Bay Area commuters continue to move into the county. To address the long-standing imbalance of jobs and housing, the region must go beyond attempting to simply improve commuter travel times and develop policies to encourage, attract, and retain quality, higher-wage jobs through land use and fiscal decisions that develop Merced County as a desirable location for employers and employees. As noted above, strategies to attract a mix of high-tech and industrial manufacturing jobs will rely heavily on providing higher quality transportation infrastructure and more viable transportation options to make businesses more efficient, as well as providing community amenities that attract new

businesses and a highly-qualified workforce. Implementation of the Plan will result in a decrease in average vehicle commute trips length, and a decrease in the percentage of trips made by single-occupancy vehicles, as compared to the Baseline Scenario. The widespread adoption of telecommuting during the COVID pandemic suggests that physical commuting may be reduced, even as the number of commuters rises.

Transportation Technology

While there is little consensus on what the future holds, even among industry experts, there is nearly universal acceptance that emerging technologies will significantly change transportation. Several important technologies have already changed the way we travel, including the use of phone applications to navigate and plan trips, the use of phone applications to order a ride, and the increasing adoption of electric cars.

Within the next five years, several major auto makers are planning put nearly fully autonomous (self-driving)cars on the road. While we are only beginning to understand the implications of these technologies, there is an expectation that they will result in significant impacts to land use, parking, and transportation infrastructure.

Given this uncertainty, it is difficult to make definitive transportation planning decisions. As a result, transportation plans may need to be more flexible, updated more frequently, and recognize that transportation agencies will have a multitude of new and different partners sitting at the table – many of which may not operate in concert with the agency.

Some of the common challenges that transportation technologies may help to solve include:

- Providing first mile and last mile transit service for transit users to connect underserved communities to jobs
- Coordinating data collection and analysis across systems and sectors
- Limiting the impacts of climate change and reducing carbon emissions
- Facilitating the movement of goods into and within a city
- Reducing inefficiency in truck parking systems and payment
- Optimizing traffic flow on congested freeways and arterial streets
- Microtransit (see discussion below)

Transportation-as-a-Service and Microtransit

One of the more significant trends in transportation today is the increasing importance of mobility solutions that are not based on personally-owned vehicles. Some of the better-known examples of these are Transportation Network Carriers (TNC) such as Uber and Lyft, which provide transportation-as-a-service. TNC's pair passengers, most often via websites or mobile apps, with drivers who provide on-demand travel service.

Although to date TNCs have primarily been operated by private firms, transit providers are increasingly considering how to integrate and/or provide on-demand transportation services to augment the existing publicsystem and extend the reach of their systems to riders that might otherwise be too far from existing transportation hubs.

The benefits of transportation-as-a-service include the ability to reduce transportation costs for most individuals while increasing transportation options. Ultimately, transportation-as-a-service may reduce the total fleet size of personal vehicles as individual car ownership may become less desirable or essential. In turn this could have an impact on land use, premium curb space in downtown areas, and parking requirements as fewer vehicles may be owned by individuals to meet their transportation needs.

Possible negative implications of the transportation-as-a-service is the impact on transit ridership and the potential to increase vehicle miles travel (VMT) due to the frequency and ease of travel.

Recently The Bus launched a pilot program The Micro Bus, which is an example of microtransit that combines aspects of a TNC and a public transit system. The Micro Bus currently serves two defined service areas in Los Banos, Dos Palos and Santa Nella areas. with virtual stops every 1/4 mile. It represents a more customized service than fixed-route transit: In effect, it is an on-demand service to the nearest virtual bus stop can be booked by registered riders using an app on a smart phone, website or by calling a customer service number.

Autonomous Vehicles

Over the last few years there has been considerable investment in Autonomous Vehicle (AV) technology. While varying levels of vehicle autonomy already exist, several major car manufacturers have indicated they will bring nearly fully autonomous vehicles to market in the next five years. The first major market penetrations are likely to be in fleets, possibly including car-sharing services. Personal vehicles will likely be for higher income households since the costs of the first AVs will be significant.

As adoption increases, systemwide AV transportation impacts will become more significant and noticeable. While those impacts are yet to be determined, the consensus amongst experts suggests that overall Vehicles Miles Traveled (VMT) per capita may increase in response to the reduced “cost” of driving (time can be dedicated to non-driving tasks) and empty vehicles moving to make their next trip. On the other hand if the high purchase cost of AV’s causes many people to opt out of ownership in favor AV car-sharing arrangements, VMT may not increase. New regulations and/or incentives may be necessary to manage congestion if a significant number of new trips are induced by the introduction of AVs. This will likely include new areas of regulation, including curbside and right-of-way management near major pick-up and drop-off locations to maintain safe and orderly traffic operations.

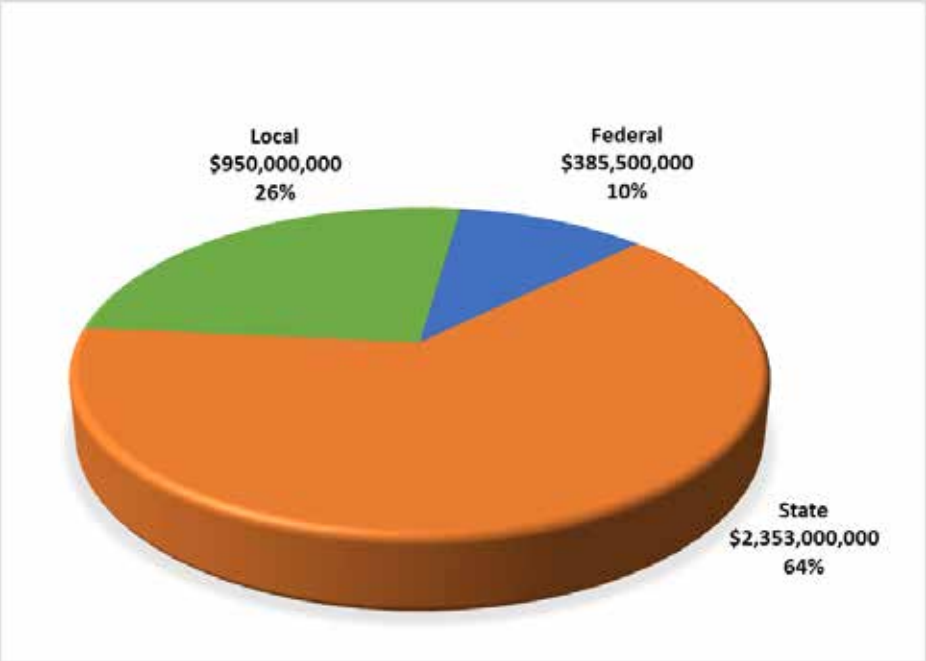
6. Investment Plan

The 2022 MCAG RTP/SCS financial forecasts provide revenue projections for MCAG member agencies through 2042. Forecasts were developed through meetings and coordination efforts with MCAG's member agencies and Caltrans. These revenue projections satisfy federal requirements to achieve a financially constrained RTP whereby total 'Tier I' project costs were accounted for through available and expected funding across the life of the Plan. The Plan's anticipated revenue is consistent with the 4-year State Transportation Improvement Program (STIP), Interregional Transportation Improvement Program (ITIP), and Federal Transportation Improvement Program (FTIP).

The 2022 MCAG RTP/SCS financial revenue forecasts approximately **$3.689 billion** in available funding through fiscal year 2046. The RTP provides projections for local, state, and federal funds and distinguishes between formula and competitive funding sources, as shown in **Figure 6.1**. Formula funds by definition are systematic and derived based on funding cycles specific to each member agency. Competitive funding, such as grant programs, were less certain and were based on past performance by MCAG's member agencies, program applicability, and an assumed capture rate based on Merced County's proportion of population and/or state-maintained centerline miles of roadway. The 2022 MCAG RTP/SCS financial revenue forecasts include three recently implemented funding sources: Measure V, SB 1, and SB 132.

The purpose of the Investment Plan is to provide assumptions of the costs and revenues necessary to implement the Regional Transportation Plan (RTP). Table 6.1 identifies all reasonably-expected revenues from public and private sources to carry out the RTP. These funding estimates were developed by MCAG in partnership with the two transit operators and in consideration of State and Federal funding trends. The projects in the 2022 RTP are consistent with the 2022 State Transportation Improvement Program (STIP), 2022 Interregional Transportation Improvement Program (ITIP) and 2023 Federal Transportation Improvement Program (FTIP)..

Figure 6.1 – Revenue Forecasts by Funding Source



TOTAL: $3,688,500,000

Developments in Federal, State and Local Funding Law and Priorities

In 2015, the Fixing America's Surface Transportation (FAST) Act was passed to provide long-term funding options for surface transportation infrastructure planning and investment. In November 2021, the Bipartisan Infrastructure Law was passed, which carries on the funding programs under FAST but also augments them and adds new funding programs. This is discussed further below.

In 2016, Measure V was passed in Merced County to provide additional funds to address a variety of mobilityneeds. Measure V provides a local source of funding by instituting a ½-cent transportation sales tax, estimated to general $540 million in revenue over the life of the 30-year measure. Measure V provides funding for regional projects, local projects, alternative mode projects, and transit projects.

In 2017, State Assembly Bill 1 (SB 1) passed, creating the Road Maintenance and Rehabilitation Program toaddress deferred maintenance on the state highway system and the local street and road system.

Also in 2017, the State Assembly passed Senate Bill 132, which contains almost $1 billion in district-specific road and rail projects in Merced, Stanislaus, and Riverside counties. Senate Bill 132 provides $500 million for projects. The measure includes $400 million in transportation funds for the extension of the Altamont CorridorExpress to Modesto, Ceres and Merced, a commuter rail line between the Bay Area and Central Valley. The measure also includes $100 million for the roadway connection project to the UC Merced campus.

In November 2021, the Bipartisan Infrastructure Law was passed. One key aim of the new federal legislation is to repair and rebuild roads and bridges with a focus on climate change mitigation, resilience, equity, and safety for all users, including transit riders, cyclists and pedestrians. Based on formula funding alone, California would expect to receive approximately $29.5 billion over five years in Federal highway formula funding for highways and bridges. On an average annual basis, this 44.1% more than Federal-aid highway formula funding under the FAST Act.

California agencies can also compete for the $15.77 billion Bridge Investment Program for economically significant bridges and $15 billion of national funding in the law dedicated to megaprojects that will deliver substantial economic benefits to communities. California can also expect to receive approximately $555 million

over five years in formula funding to reduce transportation-related emissions, in addition to about $631 million over five years to increase the resilience of its transportation system. States may also apply federal aid dollars towards climate resilience and safety projects. Improve the safety of our transportation system. The Bipartisan Infrastructure Law invests $13 billion over the Fixing America's Surface Transportation (FAST) Act levels directly into improving roadway safety. Over five years, California will receive approximately $179 million in 402 formula funding for highway safety traffic programs, which help states to improve driver behavior and reduce deaths and injuries from motor vehicle-related crashes. On an average annual basis, this represents a 29% increase over FAST Act levels.[1]

On March 10, 2021, the California State Transportation Agency (CalSTA) released the draft Climate Action Plan for Transportation Infrastructure (CAPTI). The plan details how the state recommends investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety and equity. CAPTI builds on executive orders signed by Governor Gavin Newsom in 2019 and 2020 targeted at reducing greenhouse gas (GHG) emissions in transportation, which account for more than 40 percent of all emissions, to reach the state's ambitious climate goals.

Under CAPTI, where feasible and within existing funding program structures, the state will invest competitive transportation funds in sustainable infrastructure projects that align with its climate, health, and social equity goals. The CAPTI Investment Framework will guide CalSTA decision-making around the Transit and Intercity Rail Program, the State Highway Operations and Protection Program, the Interregional Transportation Improvement Program, as well as the CTC's policies on the Active Transportation Program, the Solutions for Congested Corridors Program, the Trade Corridor Enhancement Program, and the Local Partnership Program. CAPTI details the impacts on these programs and planning processes.[2]

The 2022 MCAG RTP/SCS financial revenue forecast predicts $3.689 billion in available funding through fiscal year 2046.

Sources of Funding

State Transportation Improvement Program (STIP)

The STIP is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded primarily from state and federal gas taxes. STIP programming occurs every two years. The programming cycle begins with the release of a proposed fund estimate, followed by California TransportationCommission (CTC) adoption of the fund estimate. The fund estimate serves to identify the amount of new funds available for the programming of transportation projects. Once the fund estimate is adopted, Caltrans and the regional planning agencies prepare transportation improvement plans for submittal. Caltrans prepares the Interregional Transportation Improvement Program (ITIP) using Interregional Improvement Program (IIP) funds, and regional agencies prepare Regional Transportation Improvement Programs (RTIPs) using Regional Improvement Program (RIP) funds. RIP funds include monies for Planning, Programming and Monitoring (PPM) activities. The STIP is then adopted by the CTC.

State Highway Operation and Protection Program (SHOPP)

SHOPP includes State Highway safety and rehabilitation projects, seismic retrofit projects, land projects, building projects, landscaping, operational improvements, bridge replacement, and the minor program. Caltrans is the owner-operator of the State Highway System and is responsible for its maintenance. Unlike STIP projects, SHOPP projects may not increase roadway capacity. SHOPP uses a four-year program of projects, adopted separately from the STIP cycle.

[1] The Bipartisan Infrastructure Law Will Deliver for California | US Department of Transportation. US DOT; Accessed 5/14/2022
[2] CAPTI Frequently Asked Questions | CalSTA https://calsta.ca.gov/subject-areas/climate-action-plan/faq. Accessed 5/19/2022

Measure V

Measure V was passed by voters in November 2016 to implement a 30-year, ½ cent transportation sales taxin Merced County. Through the passage of Measure V, Merced became a Self-Help County, which will increase its ability to leverage additional federal and state discretionary funding.

Measure V Funds were provided for the following categories: Transit, Eastside Regional, Westside Regional, and Local. Estimates were gleaned from the MCAG Measure V first year revenue estimates, which estimatesthat the measure will generate approximately $18 million per year based on the ½-cent sales tax for an estimated total of $540 million over the course of the measure's lifetime.

Senate Bill 1

State Assembly passed Senate Bill 1 in 2017, creating the Road Maintenance and Rehabilitation Program to address deferred maintenance on the state highway system and the local street and road system. SB 1 funding provides both formula funding programs and competitive funding programs, including State Rail Assistance, Additional State Transit Assistance, Transit and Intercity Rail Capital Project, Trade Corridor Enhancement Program, Solutions for Congested Corridors,Sustainable Communities Planning Grant, and Adaptation Planning Grant.

Senate Bill 132

State Assembly passed Senate Bill 132, which contains almost $1 billion in district-specific road and rail projects in Merced, Stanislaus, and Riverside counties. Senate Bill 132 provides $500 million for projects. The measure includes $400 million in transportation funds for the extension of the Altamont Corridor Express to Modesto, Ceres and Merced, a commuter rail line between the Bay Area and Central Valley. The measure also includes $100 million for the roadway connection project to the UC Merced campus.

Active Transportation Program

The Active Transportation Program (ATP) was created in 2013 to encourage increased use of active modes of transportation, such as biking and walking. The ATP consolidates several federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program with a focus of making California a national leader in active transportation.

The ATP is a statewide grant funding program. ATP Cycle 6 covers four years beginning in 2023. Funding will be distributed in three categories, with half going to a statewide competition, ten percent to small urban and rural areas, and forty percent to the larger metropolitan areas. As of March 2022, Caltrans is expected to have a budget of about $651 million to program for Cycle 6. Merced County has a Cycle 6 application for a Valeria Street & Bryant Avenue Shared-Use Bike-Pedestrian Path in Dos Palos.

Congestion Mitigation Air Quality Funds

As a non-attainment area, Merced County receives federal Congestion Mitigation Air Quality (CMAQ) funds. These funds are to be used for projects that contribute to improving air quality in the region. MCAG oversees the distribution of these funds. Examples of eligible CMAQ projects include the following:

- Public transit improvements.
- High occupancy vehicles (HOV) lanes.
- Intelligent Transportation Infrastructure (ITI).
- Traffic management, traveler information systems, and electronic toll collection systems.
- Employer-based transportation management plans and incentives.

- Traffic flow improvement programs such as signal coordination.
- Fringe parking facilities serving multiple occupancy vehicles.
- Shared ride services.
- Bicycle and pedestrian facilities.
- Flexible work-hour programs.
- Outreach activities establishing Transportation Management Associations.
- Fare/fee subsidy programs.

Cap-and-Trade Funds (Greenhouse Gas Reduction Fund)

AB 32 requires California to return to 1990 levels of greenhouse gas emissions by 2020. The Cap-and-Trade Program is a key element in California's climate plan. It sets a statewide limit on sources responsible for California's greenhouse gas emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and a more efficient use of energy.

Cap and Trade revenues are made up of the portion of auction proceeds that areallocated to the Affordable Housing and Sustainable Communities, Intercity Rail, and Low Carbon Transit programs. At least 25 percent of Cap-and-Trade expenditures must benefit disadvantaged communities, and at least 10 percent must be located in disadvantaged communities.

Additional funding sources include the following:

Local Funds

- State Gas Tax
- Transit Fares
- Local Impact Fees, Measures, and General Funds

State Funds

- Local Transportation Fund (LTF)
- State Transit Assistance (STA)
- Highway Maintenance (HM)
- Aviation Funding
- Low-Carbon Transit Operations Program (LCTOP)
- Systemic Safety Analysis Reporting Program (SSARP)

Federal Funds

- Federal Transit Funding Programs
- Surface Transportation Block Grant Program (STBGP)
- Highway Safety Improvement Program (HSIP)
- Highway Bridge Program (HBP)
- Federal Lands Funds

Potential new sources of funding include the following.

- Local Motor Vehicle Fuel Tax
- Public and Private Parking Fees
- Regional Transient Occupancy Tax (Hotel/Motel)
- Toll Facilities
- Vehicle Miles Traveled Fee
- Emissions Fee
- Public-Private Partnerships

Estimated Revenues

The 2022 MCAG RTP/SCS financial revenue forecasts approximately $3.689 billion in available funding through fiscal year 2046. Forecast estimates are specified for local, state, and federal funding sources, as shown in **Table 6.1**.

Table 6.1 – 2022 RTP/SCS Revenue Forecasts

Federal:	**$385,500,000**
Congestion Mitigation Air Quality (CMAQ)	$100,000,000
Surface Transportation Block Grant Program (STBG)	$100,000,000
Highway Infrastructure Program (HIP)	$5,500,000
Federal Transit Administration (FTA)	$137,500,000
Department of Interior: National Park Service- YARTS	$37,500,000
Highway Safety Improvement Program (HSIP)	$5,000,000
State:	**$2,353,000,000**
State Transportation Improvement Program (STIP): RIP	$75,000,000
State Transportation Improvement Program (STIP): IIP (LIV)	$34,000,000
State Transportation Improvement Program (STIP): IIP	$200,000,000
State Highway Operations and Protection Program (SHOPP)	$875,000,000
Highway Bridge Program (HBP) - competitive grant	$125,000,000
Local Transportation Fund (LTF): Bus	$187,500,000
Local Transportation Fund (LTF): Rail	$10,000,000
Local Transportation Fund (LTF): ATP set-aside	$5,000,000
State Transit Assistance (STA)	$62,500,000
Low Carbon Transit Operations Program (LCTOP)	$7,500,000
Active Transportation Program (ATP) - competitive grant	$25,000,000

State *(continued)*:	
Systematic Safety Analysis Reporting Program (SSARP)	$1,000,000
SB1: TCEP (AME 1B)	$10,000,000
SB1: TCEP (Livingston SR-99 Widening N/B)	$35,000,000
SB1: TCEP, TIRCP, and other programs	$300,000,000
SB1: Local Partnership Program (LPP) - apportionment	$13,000,000
SB1: RMRA LS&R	$100,000,000
SB 132: Campus Parkway	$100,000,000
SB 132: ACE Extension to Merced	$100,000,000
Highway Maintenance (HM)	$87,500,000
Local	**$950,000,000**
Measure V Transit	$50,000,000
Measure V Active Transportation	$75,000,000
Measure V (Road Capacity)	$40,000,000
Measure V (Road Maintenance/Safety)	$285,000,000
Local funds (Gas Tax)	$375,000,000
Local Funds (General Funds, Jurisdiction, Measure and Impact Fees, etc.)	$80,000,000
Transit Fares	$45,000,000
Total	**$3,688,500,000**

7. Scenario Development

Scenario planning is a method by which several scenarios are developed, studied under future year conditions, and their performance evaluated against each other. In the context of the MCAG 2022 RTP/SCS, scenario planning was used to study three different scenarios. Each scenario represents a different set of landuse patterns, development characteristics, and transportation investments. The analysis demonstrates how the different sets of investments and land uses create different future outcomes.

Linking Land Use and Transportation Planning

The requirement to integrate transportation investments with land use decisions on growth and housing comes explicitly from SB 375. As a result, MPO regions such as Merced County should achieve specified regional targets for reducing greenhouse gases from cars and light trucks, and identify specific areas in theregion to accommodate the projected population growth during the timeframe of the Plan.

Developing possible scenarios of land use and transportation investments starts with demographic growth forecasts. The 2022 RTP/SCS relies on a regional forecast of future demographics that was prepared as part of a larger demographic forecast for the three-county region encompassing Merced, Stanislaus and San Joaquin Counties. The forecasts were developed specifically for the preparation of the 2018 RTP/SCS in each respective county (per the Federal FAST Act MPO Planning Regulations and SB 375). As described in **Chapter 5**, forecasts were developed by the University of Pacific (UOP) in 2016 and used for the 2018 RTP/SCS. The UOP demographic forecast process is most accurate at the countywide level of aggregation. For smaller units of geography, such as cities or unincorporated census places, the forecasts require more scrutiny. Hence, the forecasts were reviewed by each of MCAG's member agencies. For the current 2022 RTP/SCS, the UOP forecast has been updated using population estimates and projections by the California Department of Finance to set total population growth. This revision reflects slower population growth in the region and the state, including the demographic effects of the COVID-19 pandemic.

Using the demographic projections, three scenarios of land use and transportation investment were developed to accommodate future growth, and are consistent with the Merced County's Regional Housing Needs Allocation (RHNA). This process is described in **Appendix M**. Each scenario was developed according to a theme to help ensure that choices over land use transportation investments were consistent with one another. Land use choices in a scenario included decisions over development patterns, such as where to locate new housing, new job centers, and new mixed-use areas relative to existing communities (e.g., infill vs. converted farmland or open space). They also included the density of new development, which dictates the relative proportion of large-lot-single-family housing to small-lot-single-family housing to multifamily

housing, and the proximity to complementary uses such as services and employment centers. Transportation investment choices in a given scenario focus on different spending levels for transit and alternative modes of travel (e.g., bike, pedestrian).

Scenario Development

Scenario 1. Baseline

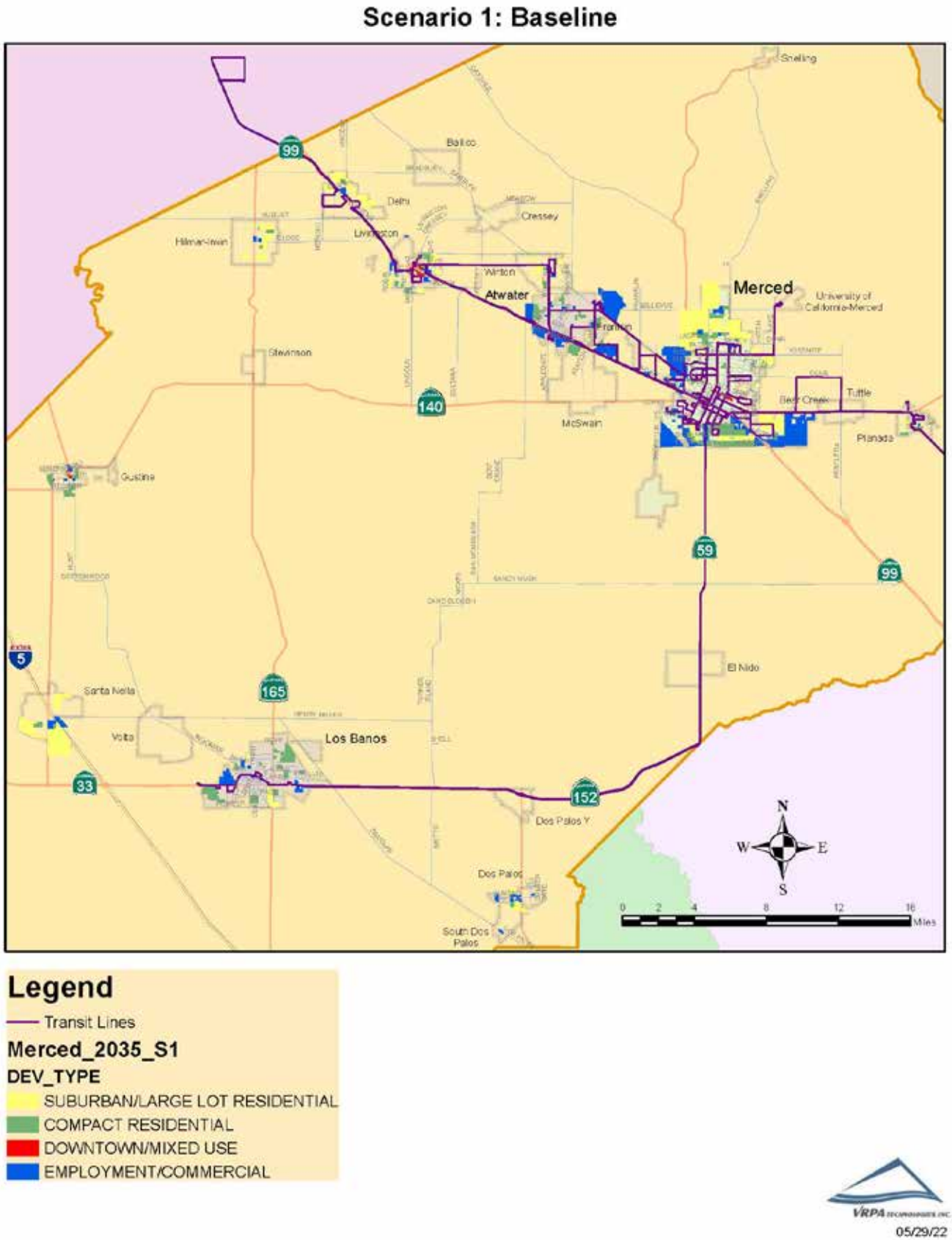
Under the Baseline Scenario, residential developments will go in wherever there is land available for such development. This could include conversion of farmlands and annexation of these developments. There is not a significant emphasis on mixed-use developments. Average residential density for new development is approximately 7.3 units per acre

There is no significant emphasis on infill or mixed-use development: New development would be primarily single-family homes on small or large lots in new subdivisions.

Scenario 1 includes the arrival of the Altamont Corridor Express (ACE) in Merced County with stations in Merced and Livingston and Atwater. This new commuter rail service will provide connections to the North Valley, Tri Valley, Bay Area, and Sacramento Valley.

Existing levels of investment for local transit operations are maintained (i.e., the existing level of service/operation continues. Existing levels of investment for rideshare and vanpooling are also maintained. Investments for bike/pedestrian projects are maintained at current levels, with a reliance on exactions on new subdivisions to construct facilities. Roadway maintenance funding will not be affected.

Figure 7.1 – Scenario 1: Baseline



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Scenario 2. Conserve Merced County

Scenario 2: Conserve Merced County emphasizes controlled concentric growth, largely within the limits of the respective General Plans of local jurisdictions within Merced County. Development focuses on empty lots within city limits and gradual growth directly connected to established neighborhoods. This scenario allows for growth in unincorporated communities, but no new unincorporated communities will be established. Development will be concentrated to minimize any conversion of prime farmland, focusing on "upward development" instead of "outward development."

This development emphasis results in a higher average housing density of 10.3 units per acre and aims to place housing closer to jobs and services. The higher housing density comes greater reliance on smaller-lot single family homes and multi-family housing. This development also focuses on housing and jobs in areas that are more walkable and around major transportation corridors. Some mixed-use development will be pursued in larger cities to maximize land use. Scenario 2 also encourages the development of new bicycle and pedestrian improvements, especially those on key corridors and near schools. Transit services will transition to a zero-emission fleet.

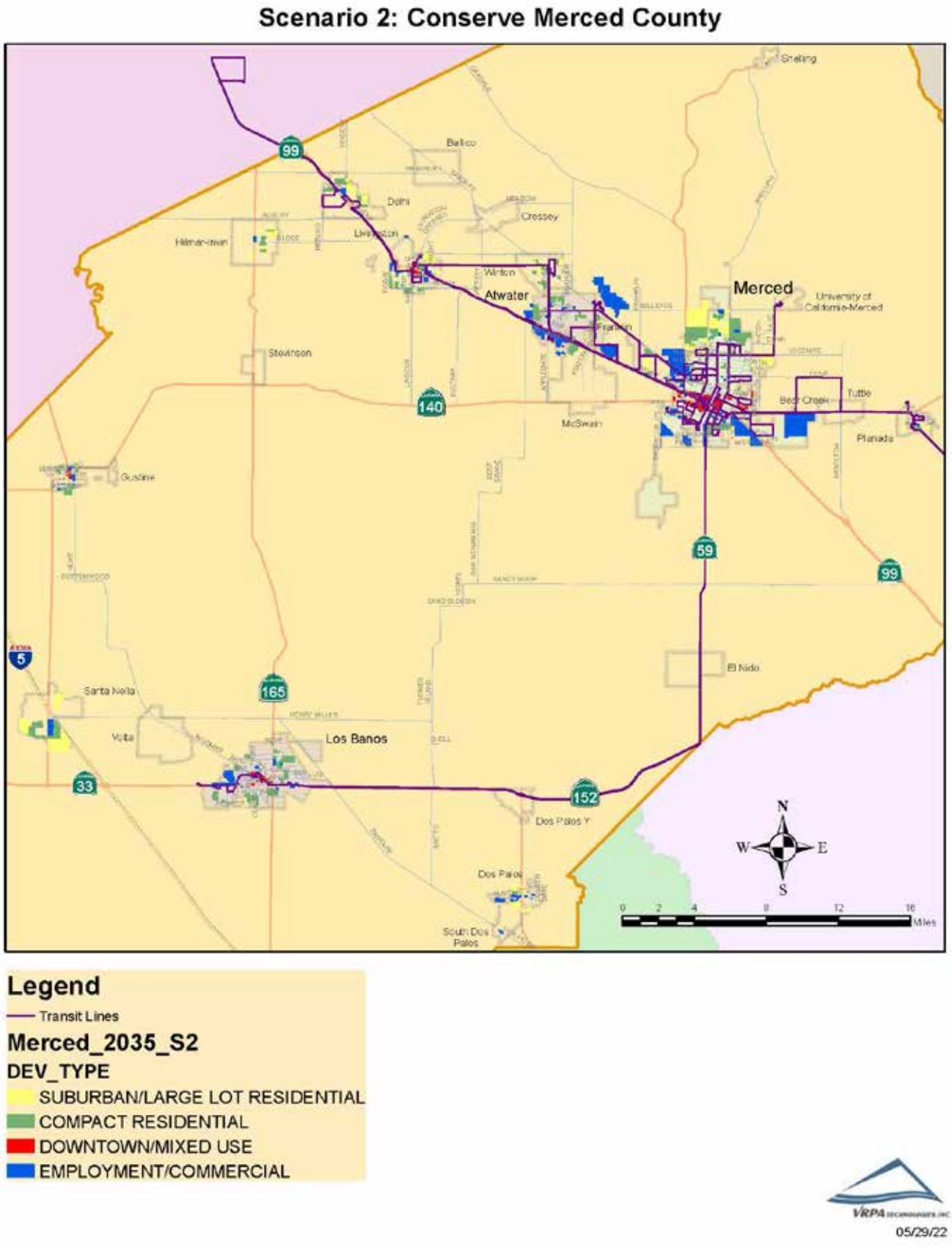
Scenario 2 also includes the arrival of the Altamont Corridor Express (ACE) in Merced County with stations in Merced and Livingston and Atwater. This new commuter rail service will provide connections to the North Valley, Tri Valley, central Bay Area, and the Sacramento Valley.

Both Scenarios 2 and 3 will have increased investments for more outreach to employers and for incentivizing rideshare and vanpooling. Roadway maintenance funding will not be affected.

Scenario 2 focuses on infill development in downtown cores in close proximity to jobs and services. It also limits development in new growth areas by adding no new unincorporated communities. Compared to Scenario 1, the new residential neighborhoods in this scenario are more compact.

The higher housing density compared to the Baseline Scenario 1 comes from a greater reliance on multi-family housing in, as well as a relative emphasis on smaller-lot single-family homes over large-lot single-family homes. Consistent with having more infill development for housing and jobs in downtown areas and along major transportation corridors, Scenario 2 increases spending on bicycle/pedestrian improvements over Scenario1.

Figure 7.2 – Scenario 2: Conserve Merced County



Scenario 3. Conserve & Connect Merced County

Scenario 3: Conserve & Connect Merced County is similar to Scenario 2 in terms of land use. Scenario 3 also emphasizes controlled concentric growth, largely within the limits of the respective General Plans of local jurisdictions within Merced County. Development focuses on empty lots within city limits and gradual growth directly connected to established neighborhoods. The scenario allows for growth in unincorporated communities, but no new unincorporated communities will be established. Development will be concentrated to minimize any conversion of prime farmland, focusing on "upward development" instead of "outward development."

Scenario 3 focuses on higher density residential development with the goal density of **10.9 units per acre**. This density means a greater emphasis on multi-family housing such as townhouses, condominiums, duplexes, and apartments. There will also be a focus on smaller-lot single family homes in walkable and bikeable neighborhoods with transit access. The scenario also prefers the inclusion of more mixed-use developments in urban centers, especially on key corridors and near transit services. Apartments and mixed-use developments would be heavily emphasized for the future development of the University of California Merced.

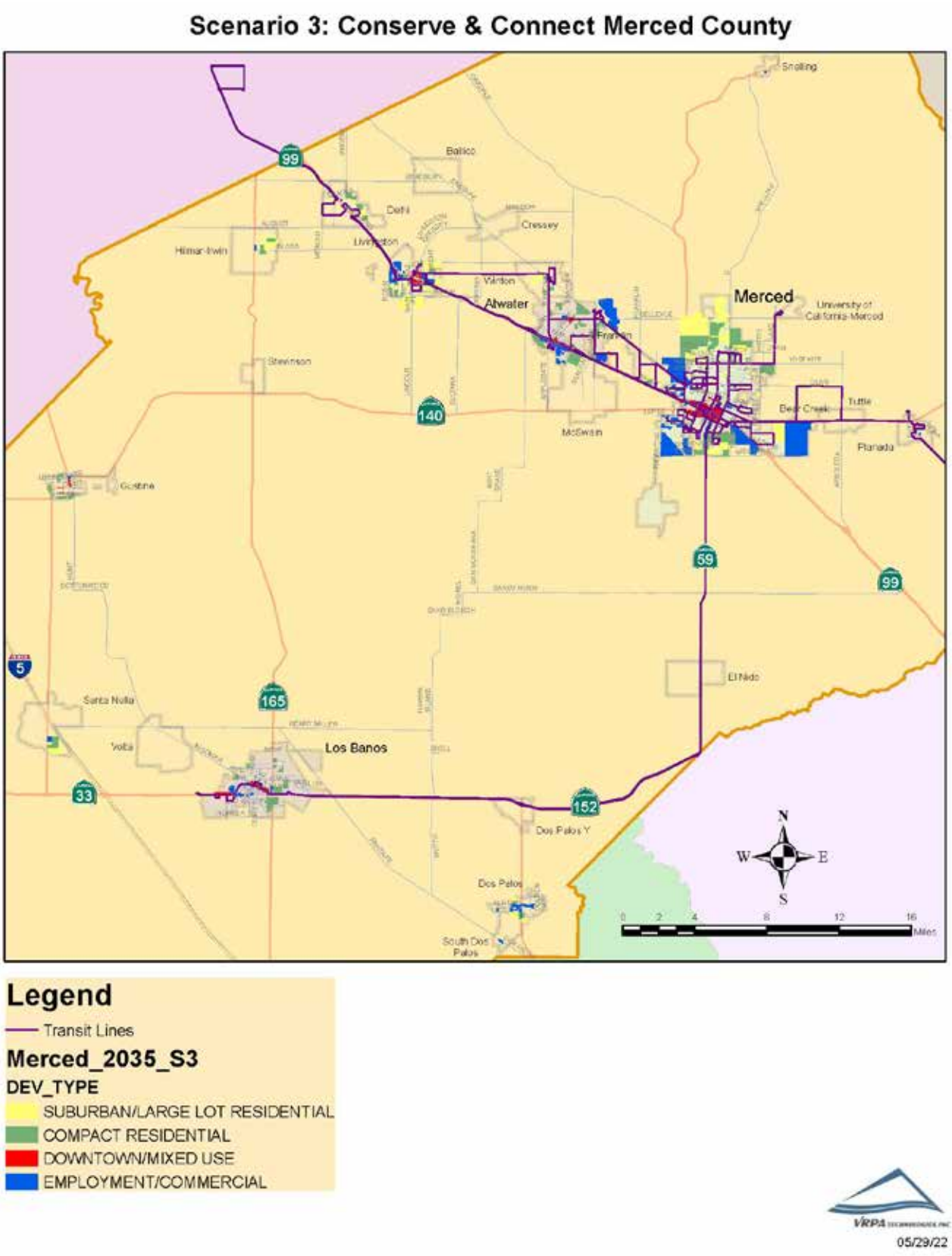
With the higher density development of Scenario 3 there is more investment into public transit to move the people of Merced County more efficiently and with fewer emissions per capita. This scenario emphasizes the development of station area planning with the arrival of the Altamont Corridor Express (ACE) in Merced County with new stations in Merced, Livingston, and Atwater. Existing rail service on the Amtrak San Joaquins will be increased through the double track improvements on the existing right-of-way and through cross-platform connections to ACE and to California High-Speed Rail at a unified station in Merced. These connections will provide faster direct travel to an expanded list of destinations throughout the San Joaquin Valley, the Tri Valley, Bay Area, and Sacramento Valley. A connectivity study will be conducted to coordinate transit with these services, including a consideration of pulsed transit services to meet each train. Station areas will also feature bicycle and pedestrian connectivity to encourage active and healthy transportation habits in downtown areas. **Scenario 3 includes these increased alternative mode investments.**

Scenario 3 will focus on developing ridership and **expanding the transit system to meet the needs of Merced County residents**. A key improvement will be increased frequency on key urban core routes and additional fixed routes as demand requires. Transit for students will be especially emphasized, connecting students to Downtown Merced, Merced College, UC Merced, and major student housing centers. Similar improvements will be made to connect students at Merced College's Los Banos Campus, Downtown Los Banos, and housing developments. **Another focus area will be on multimodal connections to air and rail, similar to the current connections made by YARTS at Merced Regional Airport and the current Merced Amtrak Station**. Transit services will transition to a zero-emission fleet more quickly. MCAG and TJPA will work to aggressively pursue alternative funding methods to implement this transition as soon as possible.

The **microtransit system, the Micro Bus, will also be expanded to provide first/last mile connections**. In the near future, this program will be expanded to the Eastside and key communities to provide connectivity to fixed route services. Free fares (fixed routes, paratransit, and microtransit) will continue to be provided to seniors, veterans, and ADA-eligible riders. The long-term vision of the plan is to provide accessible transit to all through an extensive service connecting all communities in the Merced Region to fixed-route service, passenger rail, and air service.

Both Scenarios 2 and 3 will see increased investments for more outreach to employers and for incentivizing rideshare and vanpooling. Roadway maintenance funding will not be affected.

Figure 7.3 – Scenario 3: Conserve & Connect Merced County (Preferred Scenario)



Scenario 1 most closely emulates land use plans prepared by local jurisdictions in past decades, while Scenarios 2 and 3 are meant to represent more compact development patterns, which can contribute to lower greenhouse gas (GHG) emissions from on-road mobile sources. As such, Scenarios 2 and 3 reflect what growth could look like "if" the themes of more compact and mixed-use development were to occur.

Scenario 3: Conserve & Connect Merced County was adopted by the MCAG Board as the Preferred Scenario, and is synonymous with the 2022 RTP/SCS, or "the Plan". Scenario 1 is considered the Baseline Scenario. **Chapter 8** presents the results of key performance measures for the Plan and as well as Scenarios 1 and 2.

Performance Measures

As described in **Chapter 2**, MCAG developed an extensive list of goals, objectives, and performance measures to help quantify and evaluate the tangible results of the 2022 RTP/SCS. Using performance measures is not only good practice, but also critically important, because they help decision-makers and thepublic evaluate and make informed decisions on the expected results of a plan before it is implemented. Additionally, performance measures can provide useful ongoing information as projects are developed to ensure that they continue tomeet the needs of the region.

Detailed information on the performance measures and their results can be found in **Chapter 8** and **Appendix L**.

8. Scenario Evaluation

Scenario Testing

The three land use scenarios presented in **Chapter 7** were compared across several performance indicators to help evaluate the impacts between each scenario. These indicators were also presented to the public, the RTP/SCS Advisory Committee, and the MCAG Governing Board.

The results of these comparisons informed the decision to select Scenario 3: Conserve & Connect Merced County as the 2022 RTP/SCS Preferred Scenario.

The results of these comparisons informed the decision to select Scenario 3: Conserve & Connect Merced County as the PreferredScenario (or the "Plan"). This chapter summarizes the performance measure results for the Plan as compared against Scenario 1: Baseline, which reflects "business as usual" conditions for the region, and Scenario 2 Conserve Merced County.

Performance Measures

The relative impact of Plan was established by the performance measures associated with the goals presented in **Chapter 2.** Performance measures provide tangible results related to transportation, development, equity, environment, and health, among other issues, which provide a look intothe potential future impacts of the Plan. In addition, these performance measures can provide ongoing information on regional benefits as projects are developed.

In summary, the Plan results in the following improvements, among others, to the Merced region in relation to the Baseline:

- Fewer new vehicle trips and shorter trip lengths
- Similar proportion of trips made by bike, walking, or public transit
- More households and jobs in close proximity (1/2 mile) to transit
- More multi-family housing options at lower housing prices
- Higher density of housing options in downtown cores and located closer to transit services
- Lower CO2 emissions per household

- Lower energy and water consumption by households
- Fewer acres of important farmland and critical wildlife habitat consumed by new development
- Fewer greenhouse gas emissions from passenger vehicles

The Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) provides a comprehensive survey of important farmlands for the region. The latest year for which the survey is available is 2018; and these data were the best practically available data at the time of SCS preparation. Resource maps produced in March 2013 as part of the San Joaquin Valley Greenprint provide location information on critical habitats, vernal pools, and other resources on the regional scale. These resource areas were compiled as GIS layers that acted as constraints to development of land in the SCS preferred scenario. These data were the best practically available data on these resource areas at the time of SCS preparation.

The following tables highlight the various performance measure results for the Plan (Scenario 3) and the alternative Scenarios 1 and 2 based on the 2022 RTP Network.

Table 8.1 Housing Performance Measures

2046	Regional Gross Residential Density (units per acre)	Regional Net Residential Density (units per acre)	% Multi-family	% Single-Family Small Lots	% Single Family Large Lots	Newly Developed Acres Consumed	Ag Land (Acres) Consumed	Important Ag Land (Acres) Consumed	Critical Habitat Land (Acres) Consumed
Scenario 1	4.8	7.3	3%	50%	47%	8,217	6,266	3,599	191.5
Scenario 2	6.9	10.3	14%	71%	15%	6,169	4,394	2,213	0.0
Scenario 3	7.2	10.9	30%	52%	18%	5,837	4,474	2,171	188.0

Table 8.2 Environmental Performance Measures

2046	CO2 Emissions per Household (tons per year)	Water Consumption per Household (gallons per day)	Energy Use per Household (millions of BTU per year)
Scenario 1	8.2	506.2	87.9
Scenario 2	7.1	408.8	75.7
Scenario 3	6.9	380.2	73.8

All three scenarios meet Federal Air Quality Conformity requirements. The plan will not result in excessive emissions of Ozone, PM2.5 and PM10. The plan will also exceed the California Air Resource Board goal of at least a 14% reduction in per capita greenhouse gas(GHG) emissions from cars and light trucks in the year 2035 compared to 2005 levels. The Plan will reduce GHG emissions by 17.7% over this period, based on the modeling. Further reductions are likely due to the increased emphasis on transit and ridesharing embodied in the Plan since the Merced transportation model is not highly sensitive to these kinds of investments. CARB has an off-model procedure that estimates a further 1.0 percent reduction in per capita GHG reductions from the Plan, for a total reduction of 18.7% in per capita GHG emissions (See Appendix U, pp. 15-18).

Table 8.3 Transportation Performance Measures

	Modeled Mode Share							Commute	
	Drive Alone	Two-person Shared Ride	Three-plus person Shared Ride	Transit	Bike	Walk	Other	Home-to-Work (HW) Average Trip Distance (Miles)	HW Average Travel Time (Min)
2035									
Scenario 1	34.25%	22.25%	28.87%	1.18%	1.11%	10.65%	1.69%	7.43	13.08
Scenario 2	34.93%	22.20%	28.79%	1.18%	1.13%	10.60%	1.70%	7.45	13.11
Scenario 3	34.54%	22.12%	28.68%	1.19%	1.15%	10.61%	1.71%	7.38	12.99
2046									
Scenario 1	34.35%	22.21%	28.81%	1.19%	1.12%	10.67%	1.65%	7.59	13.31
Scenario 2	34.54%	22.14%	28.71%	1.19%	1.14%	10.61%	1.66%	7.58	13.28
Scenario 3	34.74%	22.04%	28.56%	1.19%	1.17%	10.62%	1.68%	7.30	12.90

Table 8.4 Transportation Performance Measures *(continued)*

	Percent of Housing Accessible by Transit (2046)	Percent of Jobs Accessible by Transit (2046)	Greenhouse Gas (GHG) reductions in 2035 compared to 2005
Scenario 1	35.6%	39.1%	-16.4%
Scenario 2	44.7%	46.8%	-16.7%
Scenario 3	43.91%	45.57%	-17.7%

9. Action Plan

The 2022 RTP/SCS provides a plan for transportation improvement projects to accommodate anticipated growth within the region, as well as meet the specific priorities and goals identified in this Plan.

Projects were identified in coordination with MCAG's member agencies and Caltrans, and reflect local, regional, and state transportation planning efforts. Projects were evaluated against regional performance measures to ensure compatibility with the region's goals and objectives. Projects were added to the Tier I Project List — which represents financially-constrained priority projects (see **Table 9.2**) — for inclusion in the 2022 RTP/SCS.

Goals, Objectives, and Actions

The following goals and objectives include short-term and long-term actions.

1. **Active Transportation (Bicycle & Pedestrian):** A regional transportation system for bicyclists and pedestrians. Create a safe, connected, and integrated regional transportation system for bicyclists and pedestrians.

    1.1. Develop and construct bike and walkway facilities in communities where non-motorized systems do not currently exist.

        1.1.1. Construct class I, II, III, and IV bike routes as designated in the local and regional plans.

    1.2. Promote the development of policies that expand bike and pedestrian facilities for all residents.

    1.3. Maximize state and federal active transportation funding opportunities for local and regional project delivery.

        1.3.1. Audit the utilization of Measure V local funds as it relates to the voter-approved minimum requirement for active transportation investments.

        1.3.2. Promote and assist with the application processes for major state and federal funding cycles.

    1.4. Prepare and/or update a regional active transportation/non-motorized plan every five years.

        1.4.1. Create an Advisory Committee or use existing groups for bike planning and project implementation recommendations.

        1.4.2. Implement the projects and programs in the plan.

    1.5. Develop and construct walkway facilities in urban areas and other communities where pedestrian systems are currently lacking.

1.5.1. Support infill projects to provide connectivity of facilities.

1.6. Actively pursue pedestrian related funding sources to implement local and regional plans..

1.7. Identify local match funding opportunities for state and federal active transportation grants.

2. Air Quality: Achieve air quality standards by the Environmental Protection Agency (EPA), and the State Air Resources Board.

2.1. Coordinate transportation planning with air quality planning at the technical and policy level.

2.1.1. Assist the San Joaquin Valley Air Pollution Control District to develop the transportation-related portions of the State Implementation Plan for air quality.

2.1.2. Evaluate and assist in the implementation of appropriate Transportation Control Measures (TCM's).

2.1.3. Support the expeditious implementation of TCM's identified in the State Implementation Plan for Merced Region jurisdictions.

2.1.4. As required by federal regulation, give funding priority to TCM's.

3. Aviation: Provide a fully functional and integrated air service and airport system that complements the countywide transportation system.

3.1. Maintain daily commercial airline service to a major metropolitan airport.

3.1.1. Support the expansion of commercial airline service in Merced County.

3.2. Work with local agencies to ensure compatible land uses around existing airports to reduce noise conflicts.

3.2.1. Support the Merced County Airport Land Use Commission and local airports in their efforts to ensure compatible land uses around airports.

3.2.2. Support the local airports in their attempts to acquire the land surrounding the airports.

3.2.3. Support noise abatement procedures.

3.3. Maintain alternative modes of transportation to and from local airports.

3.3.1. Support regularly scheduled bus transit service from regional airports to the Transportation Center.

3.3.2. Develop future transit service to general aviation airports, as needed.

3.4. Support local agencies in the development and improvement of local airports.

3.4.1. Support maintenance and rehabilitation projects on runways, taxiways, and hangars to ensure reliability of local airports.

3.4.2. Support local agencies in project development for airport expansions, relocations, or other improvements.

3.5. Participate in valleywide efforts to explore the feasibility of electric aviation as a regional transit alternative between urban centers and rural communities.

4. Energy: Reduce usage of nonrenewable energy resources for transportation purposes.

4.1. Increase public transit and carpooling/vanpooling and bicycling/walking to support population growth.

4.1.1. Add additional transit routes and services where feasible.

4.1.2. Support passage of ordinances that provide for vanpooling and carpooling programs.

4.1.3. Support passage of ordinances that provide for park and ride lots.

4.1.4. Prepare and update the Electric Vehicle Readiness Plan (EVRP), which will be used to guide and prioritize electrification deployment in the region.

4.1.5. Support electrification of public and private vehicles, and electrification infrastructure.

4.2. Assist transit agencies with aggressively pursuing Federal and State funding grants to electrify transit fleets.

5. Goods Movement: Improve the nation freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

5.1. Provide an adequate regional road system for goods movement.

5.1.1. Support the construction of the Atwater Merced Expressway (AME) connection to Castle.

5.1.2. Champion improvements on Highway 99 through Atwater and Merced.

5.2. Support the creation of a multimodal goods movement network.

5.2.1. Work with the Freight Advisory Committee to enhance and maintain a viable transportation system for freight and goods movement.

5.2.2. Support Merced County's efforts to develop an inland port at the Castle Commerce Center (former Castle Air Force Base).

5.2.3. Support expanded use of short-haul rail for goods movement.

5.2.4. Support the implementation of zero-emission trucks.

5.2.5. Explore freight congestion relief measures, such as dedicated truck lanes.

5.2.6. Work with the Freight Advisory committee to enhance and maintain a viable transportation system for freight and goods movement.

6. Highways, Streets, and Roads: Provide a safe and efficient regional road system that accommodates the demand for movement of people and goods.

6.1. Maintain a safety and efficiency on all regionally significant roads where feasible.

6.1.1. Fund and implement the projects identified on the Tier 1 priority list in the Action Element of the RTP.

6.1.2. Aggressively pursue discretionary Caltrans funding such as IIP, HSIP, SHOPP.

6.2. Identify and prioritize improvements to the regional road system.

6.2.1. Prepare and apply evaluation criteria to prioritize regional road projects identified to improve the overall transportation system of the region

6.2.2. Evaluation criteria will evaluate how the projects achieve the following objectives: 1) an integrated and balanced road system; 2) improvement in traffic flow & safety; 3) minimum adverse environmental effects; and 4) minimum adverse impacts on agricultural land.

6.2.3. Use Regional Improvement Program funds to finance the prioritized regional improvements.

6.2.4. Support improvements to Pioneer Road to alleviate congestion on Highway 152.

6.3. Use the existing street and road system in the most efficient possible manner to improve local circulation.

6.3.1. Maintain street and road system for vehicle travel, transit services, bicycle travel, and pedestrians.

6.3.2. Continue to exchange Federal STP for state dollars.

6.3.3. Aggressively pursue all available and potential fund sources to implement improvements to and help preserve and maintain the present transportation system.

6.4. Monitor the impact of development on the regional road system.

6.4.1. Continue to maintain and update transportation land use databases for determining future travel demand on the regional road system.

6.4.2. Continue to maintain and update the regional transportation model.

6.4.3. Analyze the cumulative impact of local development for the county and cities through the RTP updates.

6.5. Utilize and maximize the countywide transportation sales tax measure to expedite the delivery of local and regional transportation improvements.

7. Land Use Development Patterns and Strategies: Provide economical, long-term solutions to transportation problems by encouraging community designs that encourage walking, transit, and bicycling.

7.1. Innovative land use and transportation planning.

7.1.1. Assist cities and County in assessing their existing road network system to find the problem areas and to identify necessary improvements that would improve movement by all modes.

7.1.2. Evaluate land use strategies for member jurisdictions.

7.1.3. Encourage all jurisdictions to actively participate in the Regional Transportation Plan Update process.

7.2. Plan future roads to accommodate land uses at a regional level.

7.2.1. Assist member jurisdictions in taking a regional approach in land use and developing a road network that serves the entire region.

7.3. Plan streets that are pedestrian friendly, encourage bicycle trips and the use of mass transportation.

7.3.1. Assist member jurisdictions in developing and implementing strategies and design criteria that make new commercial and residential developments friendly to pedestrians and bicyclists.

7.4. Preserve productive farmland and land that provides habitat for rare, endangered, or threatened species.

7.4.1. Consider impacts on prime farmland and areas that support protected wildlife.

7.5. Ensure Goals and Policies that are consistent at both the regional and local levels.

7.5.1. Assist cities and County during their General Plan updates to ensure that the Plans are consistent with the RTP.

8. Outreach and Coordination: Provide a forum for participation and cooperation in transportation planning and facilitate relationships for transportation issues that transcend jurisdictional boundaries.

8.1. Assist jurisdictions in local transportation planning.

8.1.1. Review transportation impacts of land use and development proposals in jurisdictions' planning documents.

8.1.2. Provide technical assistance in the preparation of transportation financing mechanisms.

8.1.3. Review the jurisdictions' Circulation Elements for general plans and community plans.

8.2. Promote consistency among all levels of Transportation Planning.

8.2.1. Involve the local, state, and federal agencies and elected officials in the transportation planning process.

8.3. Coordinate with regional agencies.

8.3.1. Continue to work with dibs to develop and distribute materials to encourage biking and walking as alternatives to automobile use.

9. Passenger Rail: Provide a rail system that offers safe and reliable service for passengers.

9.1. Expand intercity passenger service on the Amtrak San Joaquin route.

9.1.1. Work with San Joaquin Joint Powers Authority (SJJPA) to assist with the implementation of the Merced Integrated Track Connector (MITC) Project to enable the San Joaquins to connect with HSR at the Merced Multi-Modal Downtown Station

9.2. Monitor the activities of the San Joaquin Joint Powers Authority (SJJPA) and Amtrak to support and improve passenger rail services in Merced County.

9.2.1. Support and assist the San Joaquin Joint Powers Authority (SJJPA) in the expansion of San Joaquins services including the long-term goal of hourly trips between Merced and Sacramento.

9.3. Establish new commuter rail service provided by the Altamont Corridor Express (ACE) to Sacramento and San Jose.

9.3.1. Support and assist the San Joaquin Regional Rail Commission in the extension of ACE service to Merced on the Highway 99 Corridor using Union Pacific Railroad right-of-way.

9.3.2. Work with Cities of Livingston and Atwater to plan and establish new train stations.

9.3.3. Work with City of Merced to establish a new downtown train station and a new maintenance facility.

9.3.4. Encourage and support transit and active transportation development and connectivity to new station locations.

9.4. Establish a High-Speed Rail system connecting Merced to the Bay Area and Southern California.

9.4.1. Support the High-Speed Rail planning process and actively provide comments and input.

9.4.2. Support and assist the California High-Speed Rail Authority, San Joaquin Joint Powers Authority, San Joaquin Rail Commission, and the City of Merced in planning and construction of projects for the unification of all passenger rail service at a single downtown station.

9.4.3. Support the implementation of the Initial Operating Segment connecting Merced, Fresno, and Bakersfield.

9.4.4. Support further project development and implementation of the segment between Merced and San Jose.

10. Reduce Project Delivery Delays: Efficiently use available transportation funding to expedite delivery of transportation improvements within the region, and delivery of the Measure V Expenditure Plan.

10.1. Continue to pursue all forms of federal and state grant funding for implementing multimodal and safety improvements

10.1.1. Continue to coordinate with member agencies during state and federal programming cycles.

10.1.2. Coordinate with its member agencies to develop performance metrics that inform the public and state/federal reviewing agencies how the county is expediting project delivery.

10.1.3. Administer and expeditiously implement the Measure V Expenditure Plan.

10.1.4. Annually administer and track implementation of Measure V projects.

11. Reliability & Congestion: Achieve a significant reduction in congestion on the National Highway System. Improve the efficiency of the surface transportation system.

11.1. Improve congestion monitoring systems.

11.1.1. Coordinate with Caltrans District 10 on the implementation of the National PerformanceManagement Rule.

11.1.2. Periodically prepare Performance Monitoring documentation of progress toward achieving the congestion and reliability performance targets established for Merced County.

12. Safety for all Roadway Users: Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

12.1. Assist member jurisdictions in local safety planning.

12.1.1. Support member agencies in the development of systemic safety plans in Merced County.

12.1.2. Assist member agencies to pursue competitive safety grants such as HSIP.

12.1.3. Continue to coordinate with member agencies to improve the safety of bicyclist and pedestriansfrom vehicle conflicts through improved signage and infrastructure treatments on existing and proposed roadways.

12.2. Improve safety performance monitoring systems.

12.2.1. Periodically prepare Performance Monitoring documentation of progress toward achieving the safety performance targets established for Merced County.

12.3. Coordinate with regional agencies.

13. Smart Infrastructure: Coordinate, monitor, and integrate planning and programming for intelligent transportation system (ITS), smart infrastructure, demand-responsive transportation, and automated vehicles.

13.1. Develop Smart Corridor plans in key corridors to maximize effectiveness of existing facilities including the provision of real-time roadway information to travelers regarding traffic conditions and travel alternatives.

13.2. Update the Merced Region's ITS projects list.

13.3. Support investments in non-capacity ITS improvements such as traffic signals synchronizations.

14. Social Equity and Environmental Justice: Promote and provide equitable transportation and housing options for all populations and ensure that all populations share in the benefits of transportation improvements.

14.1. Coordinate with local agencies.

14.1.1. Work with the local agencies to ensure disadvantaged communities in Merced County are provided equal access to mobility options/opportunities.

14.1.2. Work with member agencies to implement complete street projects that provide access to all users.

14.1.3. Support the equitable distribution of benefits and burdens of transportation projects.

14.1.4. Support the improvement and expansion of accessible transportation options to serve the needs of residents, especially those who have historically faced disproportionate transportation burdens, including seniors and people with disabilities.

14.2. Coordinate with regional agencies.

14.2.1. Continue to work with transit providers to produce and implement programs identified through the TDA unmet transit needs process as being reasonable to meet.

15. Sustainable Communities: Reduce per capita greenhouse gas emissions through compact growth and alternative transportation strategies. Protect and enhance the natural environment. Support vehicle electrification and the provision of electrification infrastructure in public and private parking facilities and

structures. Support a vibrant and sustainable regional economy. Maximize the use of Regional Early Action Planning 2.0 funds to implement and advance efforts to reduce per capita greenhouse gas emissions.

15.1. Prioritize infill and growth in existing communities.

15.1.1. Support strategies that promote increased investment in existing communities – prioritizing disadvantaged neighborhoods and communities - that provide a range of housing choices (affordable small, medium, large lot single family and multifamily housing) for existing and new residents.

15.1.2. Support more multifamily housing and mixed-use developments of member agencies, and coordinate on alternative mode accessibility of these developments.

15.1.3. Support housing and employment growth to existing cities and unincorporatedcommunities rather than directing growth to new town development and sprawl.

15.2. Prioritize funding for complete street projects on existing corridors.

15.2.1. Prioritize investment in active travel, including investments in necessary infrastructure (sidewalks, streetlights, curb and gutter, bike lanes, and other pedestrian safety measures) topromote increased walking and biking.

15.2.2. Establish and implement a complete streets policy that requires local jurisdictions toaccommodate all transportation users through the incorporation of sidewalks, streetlights, curb and gutter and bicycle infrastructure in all projects, prioritizing existing streets and roads.

15.2.3. Support active transportation infill projects.

15.2.4. Support active transportation safe route to school projects.

15.3. Explore funding sources to incentivize jurisdictions.

15.3.1. Develop a sustainable planning and infrastructure grant program to help jurisdictions implement the region's SCS. Utilize existing and new revenue sources to fund this program.

15.3.2. Provide funding as available for the implementation of complete streets and/or active transportation-type plans and related capital improvement programs. Funding may include but isnot limited to: Active Transportation Program (ATP) funds (including various safety, safe routes to schools, and transportation enhancement funds), Congestion Mitigation and Air Quality (CMAQ) funds, Measure V, Cap and Trade funds, and others.

15.3.3. Encourage transit agencies to make use of all available federal, state, and local funding tosustain, expand and improve local transit services, prioritizing the transit needs of disadvantaged neighborhoods and residents, including low income and transit dependent residents, and ensure the timely and best use of those funds.

15.4. Conduct a needs assessment and link it to the countywide health assessment.

15.4.1. Conduct a needs and opportunities assessment, coordinating with other assessment efforts, that catalogues health indicators, infrastructure deficiencies, housing needs, water and wastewater capacity, resource areas and farmland, employment opportunities, and access to basic services necessary to ensure the health and safety of the residents throughout the jurisdictions.

15.5. Re-evaluate project selection criteria.

15.5.1. Update project selection policy and criteria to emphasize:

- Positive effects on health outcomes;
- Reducing environmental impacts;
- Improving air quality;

- § Reducing greenhouse gas emissions; and
- § Avoiding disproportionately high and adverse effects, including social and economic impacts on traditionally disadvantaged communities, especially communities of color and low-income communities.

15.5.2. Support projects that reduce per capita vehicle use and greenhouse gas emission in accordance with State policy and legislation (e.g., SB 743):

- § Support local jurisdictions in the analysis of land use project impacts based on vehicle miles traveled.
- § Support Caltrans and local jurisdictions in the analysis of transportation project impacts based on vehicle traveled.
- § Prioritize vanpools and ridesharing.

15.5.3. Prioritize funding for vanpool and ridesharing programs to expand them and encourage their use. Investigate creative transit options for rural communities such as informal ridesharing and subsidized ridesharing to supplement paratransit. Increase efforts to encourage employers to give or increase incentives for employees to rideshare. Investigate the feasibility of dedicatinghigh-occupancy vehicle (HOV) lanes on highways and multi-lane roadways.

15.6. Emphasize and explain “co-benefits” of implementing SB 375 in addition to meeting GHG reductiontargets.

15.6.1. Benefits include:

- § Better health;
- § Less traffic;
- § Preserving farmland;
- § Less water use;
- § Less energy use;
- § Better air quality; and
- § Positive economic impact.

15.7. Enhance the existing public participation process.

15.7.1. Support a strong and equitable public participation process that meaningfully responds to and incorporates community priorities. Jurisdictions will make reasonable accommodations to ensure that all materials are readily accessible and available in languages reflective of the community’s need.

15.7.2. Workshops and hearings should be held at a time and location that is accessible to all Merced County residents. Demonstrate effectiveness in responding to comments, questions,and concerns raised during public workshops and hearings.

15.7.3. Maximize tools such as virtual meetings to increase participation.

15.7.4. Utilize community-based organization partnerships to reach targeted populations in disadvantaged and traditionally underrepresented communities.

15.8. Enhance existing transit services.

15.8.1. Improve access to public transit in rural and urban areas. Re-evaluate and update the definitions of “unmet transit needs” and “reasonable to meet” to broaden and expand service to rural areas. While

continuing to invest in existing urban service, identify new funding sources for improvements to service in rural areas.

15.8.2. Study transit improvements needed to provide better connectivity to passenger rail services.

15.8.3. Fund the expansion of transit services, i.e. microtransit on Eastside.

15.8.4. Explore transit improvements, i.e. streamlining and increasing frequency.

15.9. Invest more to promote ridesharing and vanpooling.

16. System Preservation: Maintain the existing transportation system in a state of good repair.

16.1. Administer and expeditiously implement the Measure V Expenditure Plan.

16.1.1. Administer and track the implementation of maintenance projects.

16.2. Improve pavement monitoring programs.

16.2.1. Periodically prepare Performance Monitoring documentation of progress toward achieving the pavement condition performance targets established for Merced County.

16.2.2. Support the usage of the countywide Pavement Management Program to establish and prioritize maintenance needs at the regional and local level.

16.3. Coordinate with regional agencies.

16.3.1. Coordinate with Caltrans District 10 on measuring and tracking pavement condition on National Highway System bridges and roadways consistent with state federal rules and guidelines.

16.3.2. Work with member agencies on prioritizing the locally-owned NHS facilities for investment.

17. Transit: Provide an efficient, effective, coordinated regional transit system that increases mobility for urban and rural populations, including transportation for disadvantaged persons.

17.1. Meet all transit needs that are determined to be “reasonable to meet.”

17.1.1. Provide paratransit services for the elderly, persons with disabilities, and those residents not served by a fixed-route service.

17.1.2. Provide an effective fixed route transit system to serve the general public, including transportation-disadvantaged persons.

17.2. Increase transit ridership at a rate that exceeds annual population growth rate.

17.2.1. Add additional routes and expand services as necessary to meet ridership demand to achieve established transit standards.

17.2.2. Provide improved transit service through the countywide Consolidated Transit System.

17.2.3. Plan for transit expansion to serve the greater UC Merced campus area.

17.2.4. Coordinate countywide transit system with neighboring transit services and modes – Stanislaus, Madera, Turlock Transit, Amtrak, YARTS, and Altamont Corridor Express (ACE).

17.2.5. Expand innovative services such as microtransit to meet transit needs in specific communities and or target populations.

17.2.6. Continue the free transit fare program for veterans, seniors, and ADA eligible passengers through Measure V.

17.2.7. Identify new partnerships for increasing transit accessibility for students through partnerships with Merced College and UC Merced.

17.3. Promote citizen participation and education in transit planning.

17.3.1. Involve the Social Services Transportation Advisory Council and the Citizens Advisory Committee in the regional transit planning process.

17.3.2. Use the MCAG newsletter for transit education.

17.3.3. Utilize on-board messaging for transit rider education.

17.4. Promote transit ridership to and from Yosemite National Park from each of the gateway state highway corridors.

17.4.1. Participate in the Joint Powers Authority for the Yosemite Area Regional Transportation System.

17.4.2. Aggressively pursue funding opportunities for marketing YARTS in the region for local, regional, national, and international travelers.

17.4.3. Conduct feasibility study for YARTS transition to zero-emission.

18. Transportation Financing: Develop and support financing strategies that provide for the continuous implementation of the Regional Transportation Plan projects and strategies.

18.1. Develop and adopt policies that will provide adequate funding resources for all transportation modes and strategies.

18.1.1. Continue management of regional sales tax measure (Measure V) for priority road, alternative mode, and transit improvement projects.

18.1.2. Provide technical assistance to local jurisdictions in the development of transportation financing mechanisms.

18.1.3. Consider cost efficiency in project evaluation criteria.

18.2. Assist jurisdictions in pursuing state and federal funding opportunities.

Improvement Plan

The 2022 RTP/SCS includes transportation projects that address short-term and long-term mobility and safety needs. The Plan includes approximately $1.54 billion in specifically identified project costs (Tier I projects). Another $2.15 billion in spending is assumed through 2046 on projects that are in development and projects to be identified. A Tier II list of projects in development is found in **Appendix K**.

Since the Tier I Fiscally Constrained List only programs about two-fifths of the overall forecasted $3,688,500,000 in transportation for the 24-year time period of the 2022 RTP, the Tier I project list can be considered financially constrained per federal requirements.. Only known projects have been identified, and significant additional fiscal capacity will be available as needs arise and responsive projects are developed.

For the first broad category of Road Maintenance/Operations/Safety, which includes Road Maintenance projects, Complete Streets projects, and Road Operations and Safety projects, only $391,855,000 of funding has been committed. The remaining $1,561,645,000 is available for new projects throughout the remainder of the RTP, including those on the Tier II list once they are more fully developed. In the overall revenue forecast, Maintenance and Safety projects represent over half of planned expenditures, thus helping fulfil the “Conserve” of the “Conserve & Connect” title of the Preferred Scenario. MCAG supports the “fix it first” approach so as to ensure the longevity of our current regional transportation system that keeps our residents connected and our local economy growing.

For the second category, Road Capacity, the majority of the funding has been obligated. These are all regionally significant projects that have been carried forward from the prior 2018 RTP with updated information.

For the Transit category, only about a third of the overall capacity has been programmed, leaving $416,359,000 remaining for future public transportation projects including bus and rail projects. The majority of the current obligation is for the completion of the Altamont Corridor Express (ACE) extension to Merced. Other major projects include the expansion of microtransit services for better regionwide coverage and service improvements to key destinations from affordable housing developments. Future projects will be programmed to better address the transportation needs of the citizens of Merced County as our public transportation system transforms and grows. These future projects will be determined through a regional connectivity study with an emphasis on multimodal connections to the future ACE stations at Livingston, Merced, and potentially Atwater.

Finally, much like the Road Maintenance and Transit categories, the Active Transportation category has a substantial remaining capacity of $164,118,000 available to address future growth and evolving needs of bicyclists and pedestrians throughout the region. The Transit and Active Transportation categories represent the goal of "connecting" in the Preferred Scenario.

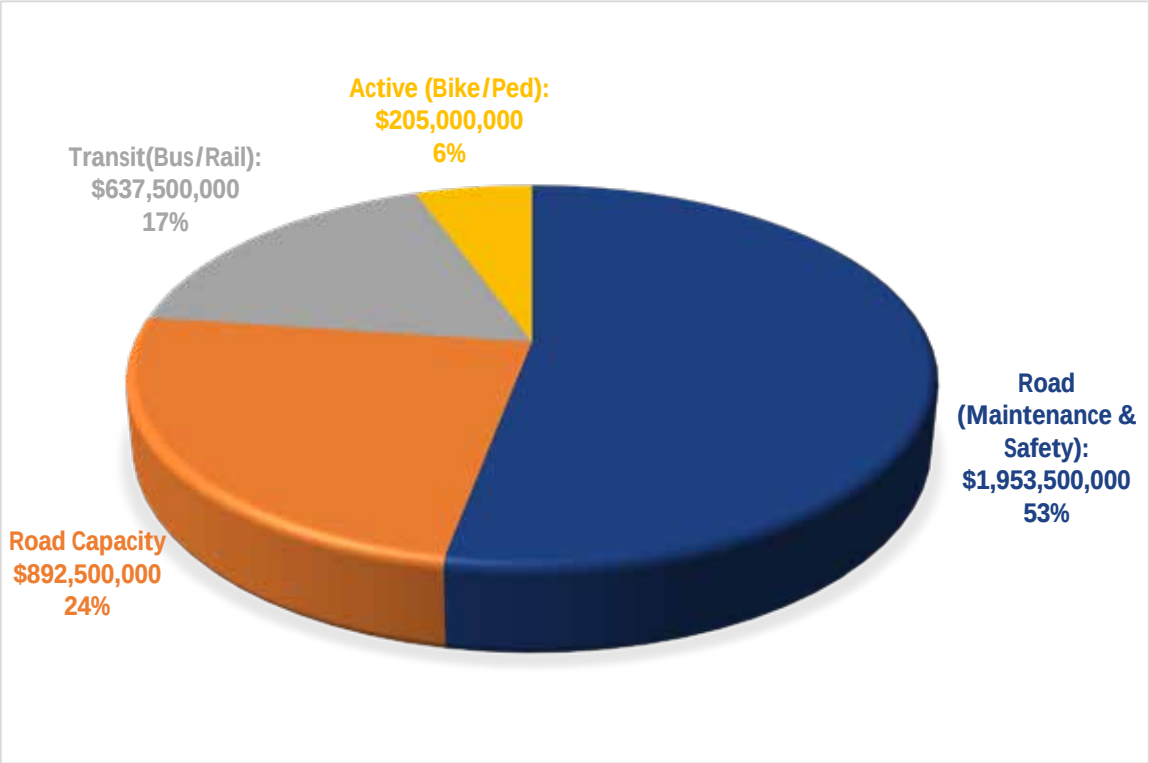
Project Purpose and Need

The Plan is required to "provide a clearly defined justification for its transportation projects and programs". Caltrans' describes a project's "need" as an identified transportation deficiency or problem, and its "Purpose" as the set of objectives that will be met to address the transportation deficiency. The project list identifies project type: roadway maintenance and safety, roadway capacity, transit (bus and rail), and active transportation (bicycle and pedestrian, as shown in **Table 9.1** and **Figure 9.1**. **Appendix I** provides a detailed financial summary of projects by type. **Table 9.2** presents the full Tier I Project List. Project purpose and need by project types is discussed below.

Table 9.1 – Plan Expenditures by Project Type

Project Category	Total	Total
Road Maintenance& Safety	$1,953,500,000	53%
Road Capacity	$892,500,000	24%
Transit (Bus & Rail)	$637,000,000	17%
Active (Bike & Ped)	$205,000,000	6%
Total	**$3,688,500,000**	**100%**

Figure 9.1 – Plan Expenditures by Project Type



Roadway Projects

The roadway projects included in the Plan emphasize congestion relief, connections to accommodate growth, and support for alternative transportation, transit, and rail access. A total of $892.5 million (or 26 percent) goes toward roadway capital improvement projects, including road widening, potential carpool and auxiliary lanes onhighways, and new connections for local access.

Active Transportation (Bike/Ped) Projects

Active transportation projects are proposed to improve mobility and accessibility for bicyclists and pedestrians along corridors, and to improve connections throughout cities and the county. A total of $205 million (or 6 percent) goes toward active transportation projects, including bicycle facilities (e.g., bike lanes, bike paths, signage), sidewalks, ADA improvements, and supporting facilities.

Transit Projects

Transit projects included in the Plan aim to enhance the accessibility and reliability of bus and rail services for all users. A total of $638 million (or 17 percent) goes to transit projects, which includes expanding transit and rail services, transit operations, bus replacement, reducing transit and rail headways (increasing frequency), and transit support facilities, such as transit stations and parking facilities.

Also included is the expansion of on-demand microtransit service to the Eastside of the County, New microtransit will serve South Merced, Atwater, Winton, Franklin-Beachwood, and Delhi. This will be implemented in a yet to be determined future year.

Rail projects included in the 2022 RTP/SCS include the Altamont Corridor Express (ACE) train extension to the City of Merced, and high-speed rail service to the City of Merced. The total project cost allocated to these projects is approximately $150 million. The ACE extension will provide commuter and intercity rail service between the San Joaquin Valley and the San Francisco Bay Area. The California High-Speed Rail Project would

parallel SR 99, with a station in the City of Merced. The service would provide connections to Madera, Fresno, Kings, Tulare, and Kern counties upon opening of the Initial Operating Segment. Future expansions will provide high-speed rail connections to the Bay Area, Antelope Valley, and Greater Los Angeles.

Operations/Maintenance/Safety Projects

The emphasis of these projects is on road operations and maintenance (O&M) to help maintain a state of good repair on the local and regional road network. A total of $1.95 billion (or 53 percent) goes toward operations/maintenance projects, including routine maintenance, reconstruction, and safety improvements.

Table 9.2 – 2022 RTP/SCS Tier I Project List

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
Atwater	Bellevue Rd and Broadway Ave Reconstruction	Reconstruction, Complete Streets, Pedestrian crossings, complements previous projects	Road Maintenance	2022	$5,000	Measure V
Atwater	Citywide Traffic Signal Synchronization	Construct traffic synchronization and replace signal controllers citywide; new signal at Shaffer Rd/Channel Ave	Road Ops/Safety	2022	$1,000	CMAQ
Atwater	Downtown Pedestrian Improvement Project (Grove, Fir, Elm, Drakeley, Cedar, Broadway, Seventh, Sixth, Fifth)	Grove Ave, Fir Ave, Elm Ave, Drakeley Ave, Cedar Ave, Broadway Ave, Seventh St, Sixth St, Fifth St, alley between Winton Way and Fifth St	Active (Bike/Ped)	2022	$1,125	CMAQ
Atwater	Downtown Pedestrian Improvement Project (Grove, Fir, Elm, Drakeley, Cedar, Broadway, Fourth, Third, Second, First)	Grove Ave, Fir Ave, Elm Ave, Drakeley Ave, Cedar Ave, Broadway Ave, Fourth St, Third St, Second St, First St	Active (Bike/Ped)	2024	$1,993	CMAQ
Atwater	Downtown Pedestrian Improvement Project (Oak, Mulberry, Laurel, Kadota, Juniper, Third, Linden, First)	Oak Ave, Mulberry Ave, Laurel Ave, Kadota Ave, Juniper Ave, Third St, Linden St, First St	Active (Bike/Ped)	2025	$1,452	CMAQ
Atwater	Downtown Pedestrian Improvement Project (Holly, Hemlock, Grove, Fir, Elm,	Holly Ave, Hemlock Ave, Grove Ave, Fir Ave, Elm Ave, Eucalyptus St, Packers St, High St	Active (Bike/Ped)	2026	$2,237	CMAQ

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
	Eucalyptus, Packers, High)					
Atwater	Fruitland Avenue Reconstruction	Full reconstruction from Winton Way to Shaffer Road	Road Maintenance	2025	$5,500	Measure V, SB 1, RSTP
				Atwater Total Tier I Projects	**$18,307**	
Dos Palos	Blossom Street East Area	Blossom St. vicinity, complete streets, rehabilitation, and ADA	Complete Streets	2026	$6,575	SB1, Measure V, ATP, Local
Dos Palos	Downtown Complete Streets	Downtown, complete streets with curb, gutter, sidewalk, street rehab	Complete Streets	2025	$2,030	SB1, Measure V, ATP, Local
				Dos Palos Total Tier I Projects	**$8,605**	
Gustine	Pedestrian Improvements on 3rd Ave, East Ave, and South Ave	Pedestrian Improvements on 3rd Ave, East Ave, and South Ave	Active (Bike/Ped)	2023	$656	CMAQ
Gustine	Schmidt Park Phase 3	Extension of multi-use path in Schmidt Park	Active (Bike/Ped)	2030	$750	SB 1, Measure V, Local
Gustine	SR-33/140 Roundabout	SR-33/140 and 4th Street; realignment of Railroad Ave	Road Ops/Safety	2023	$2,800	Local, Measure V
Gustine	SR-33/140 Intersection Improvements	Improvements to intersection of SR-33, SR-140, and 1st Ave	Road Ops/Safety	2027	$2,375	Local, Measure V
Gustine	5th Street/4th Ave Roundabout	Roundabout at 5th St and 4th Ave CML-5230(008)	Road Ops/Safety	2024	$554	CMAQ
Gustine	Sullivan Road Bridge	Bridge rehabilitation over canal at Sullivan Road	Road Maintenance	2035	$2,400	SB 1, Measure V, Local
Gustine	Gustine Phase 3 Multi-use Path	Extension of multi-use path on Meredith north on Railroad Ave CML-5230(015)	Active (Bike/Ped)	2025	$638	CMAQ
Gustine	West Ave/3rd Ave/Lucerne Ave Roundabout	Construct a roundabout at West Ave, 3rd Ave, and Lucerne Ave	Road Ops/Safety	2030	$750	CMAQ, Local, Measure V
Gustine	Sullivan Rd/Grove Ave Roundabout	Construct a roundabout at Sullivan Road and Grove Avenue	Road Ops/Safety	2028	$800	CMAQ, Local, Measure V
Gustine	Borelli Ranch Park Multi-use Path	Construct a Multi-use Path from Fentem Rd to the end of Via Palermo	Active (Bike/Ped)	2030	$450	CMAQ, Local, Measure V
Gustine	Bike Lane Improvements	Incorporate bike lane improvements at Various Locations throughout the	Active (Bike/Ped)	2030	$500	CMAQ, Local, Measure V

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
		City as described in the ATP plan				
				Gustine Total Tier I Projects	**$12,673**	
Livingston	Livingston Transit Center	Main St., along UP ROW	Transit	2027	$2,900	Measure V
Livingston	Hammatt and Campbell Intersection Improvements	Intersection and Signal Improvements	Road Ops/Safety	2035	$1,000	Measure V
Livingston	Briarwood/B Street Roundabout	Roundabout at Briarwood and B Street	Road Ops/Safety	2030	$3,500	SB-1, Measure V, Local
Livingston	B Street Corridor Improvements	Winton Pkwy and 1st Street	Complete Streets	2030	$3,900	Measure V
Livingston	Davis St Rehabilitation	Pavement rehabilitation from Stefani to South of Olds	Road Maintenance	2029	$2,000	SB-1, Measure V, Local
Livingston	Hammatt Rehabilitation	Pavement rehabilitation from Walnut to SR-99	Road Maintenance	2030	$2,000	SB-1, Measure V, Local
Livingston	One CNG Street Sweeper	One CNG Street Sweeper	Road Maintenance	2026	$350	CMAQ
Livingston	Phase 2 Max Foster Multiuse Path	Phase 2 Max Foster Multiuse Path	Active (Bike/Ped)	2023	$485	CMAQ, Local
				Livingston Total Tier I Projects	**$16,135**	
Los Banos	Pacheco Boulevard (SR-152) Regional Path	Multi-use path on SR-152, from Badger Flat Road/SR-152 to Merced College	Active (Bike/Ped)	2025	$2,321	Measure V
Los Banos	Pioneer Road Improvements Project, Phase 1	Widening and intersection improvements with signalization at intersection of Pioneer/Ortigalita Rd	Road Ops/Safety	2025	$5,487	STIP, Measure V, CMAQ, Local
Los Banos	Pioneer Road Improvements Project, Phase 2	Widening and other improvements on Pioneer Road from SR-152/Merced College to Pioneer Road/Ward Road	Road Capacity	2025	$45,000	Measure V
Los Banos	Pedestrian Improvements at Various Locations	Berkeley Drive to St. Francis Dr at various locations; Also on SR-152 from 7th St to H St (PM 20.6/21.1) at various locations	Active (Bike/Ped)	2024	$2,500	ATP, CMAQ
Los Banos	Class II Bike Paths (H St,	Construction of Class I Bike Paths on H St, Badger Flat Rd, and Overland Ave	Active (Bike/Ped)	2030	$8,000	ATP, CMAQ

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
	Badger Flat Rd, Overland Ave)					
Los Banos	Multi-use Path and Bridge across creek	Los Banos Creek Trail from Pioneer Road to SR-152	Active (Bike/Ped)	2026	$4,000	SB-1, Measure V, Local
Los Banos Total Tier I Projects					**$67,308**	
Merced	John Muir Elementary School Sidewalk Project	Safe Routes to School Sidewalk and Ramps project	Active (Bike/Ped)	2022	$1,405	CMAQ, Measure V
Merced	Motel Drive Multi-use Path		Active (Bike/Ped)	2022	$675	CMAQ, Measure V
Merced	Right Turn Channelization on SB SR-59	Channelization on southbound SR-59 approaching 16th Street	Road Ops/Safety	2022/ 2023	$215	CMAQ
Merced	Traffic Signal at SR-59/16th St	New Traffic Signal	Road Ops/Safety	2022/ 2023	$449	CMAQ
Merced	Traffic Signals Synchronization	Traffic signal synchronizations of over 30 intersections	Road Ops/Safety	2022/ 2023	$1,361	CMAQ
Merced	Black Rascal Bridge Widening	Bridge rehab on SR-59 bridge over Black Rascal Creek	Road Maintenance	2026	$6,035	Measure V
Merced	Bellevue Road Widening	SR-59 to Lake Road	Road Capacity	2035	$41,000	Measure V
Merced	Childs Ave Sidewalk (Golden Valley High School to Weaver Middle School)	Sidewalk improvements from Golden Valley High School to Weaver Middle School	Active (Bike/Ped)	2025	$1,500	Measure V, CMAQ
Merced	Pedestrian Improvements on McGregor, Woodward, Home, Parkwest, and Windsor	Pedestrian Improvements on McGregor, Woodward, Home, Parkwest, and Windsor	Active (Bike/Ped)	2024	$457	CMAQ, Local
Merced	Mission Ave Widening	SR-59 to SR-99 (approximately)	Road Capacity	2030	$28,000	Measure V
Merced	Yosemite Ave. (R St to M St)	Road Reconstruction	Road Maintenance	2025	$2,000	SB-1, Measure V, Local
Merced	R Street (16th to 18th)	Road Reconstruction	Road Maintenance	2022	$500	SB-1, Measure V, Local
Merced	G Street (Childs to 13th)	Road Reconstruction	Road Maintenance	2022	$1,000	SB-1, Measure V, Local

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
Merced	SR-59 Merced: Widen 2 to 4 Lanes	16th St to Olive Ave/Santa Fe Drive	Road Capacity	2025	$30,000	SB-1, Measure V, Local
Merced	SR-59 Merced: Widen 2 to 4 Lanes	Olive Ave/Santa Fe Drive to Bellevue Rd	Road Capacity	2035	$39,000	SB-1, Measure V, Local
Merced	M Street Bridge	Road Reconstruction	Road Maintenance	2030	$2,000	SB-1, Measure V, Local
Merced	G Street Bridge	Road Reconstruction	Road Maintenance	2030	$2,000	SB-1, Measure V, Local
Merced	R Street (Buena Vista to Yosemite)	Road Reconstruction	Road Maintenance	2025	$1,500	SB-1, Measure V, Local
Merced	M Street (Yosemite to Lehigh)	Road Reconstruction	Road Maintenance	2025	$1,500	SB-1, Measure V, Local
Merced	R Street (Olive to Loughborough)	Road Reconstruction	Road Maintenance	2025	$2,000	SB-1, Measure V, Local
Merced	16th Street (G to SR-140)	Road Reconstruction	Road Maintenance	2025	$1,500	SB-1, Measure V, Local
Merced	Two CNG Street Sweepers	Two CNG Street Sweepers	Road Maintenance	2026	$684	CMAQ
Merced Total Tier I Projects					**$164,781**	
County	Henry Miller Road Reconstruction	SR-33 to Turner Island Road	Road Maintenance	2029	$5,025	Measure V
County	Hutchens Road Rehabilitation	San Juan Rd to Indiana Rd	Road Maintenance	2025	$1,500	Measure V
County	Indiana Road Rehabilitation	Hutchins Rd to Washington Rd	Road Maintenance	2025	$1,000	SB 1, Measure V
County	Ingomar Grade Road Rehabilitation	Fahey Rd to Los Banos City Limits	Road Maintenance	2028	$3,000	SB 1, Measure V
County	Palm Avenue Rehabilitation	Hutchins Road to SR-152	Road Maintenance	2025	$1,000	SB 1, Measure V
County	Whitworth Road Rehabilitation	Stanislaus County Line to McCabe Rd	Road Maintenance	2025	$5,000	SB 1, Measure V
County	Atwater-Merced Expressway (AME) Phases 1B & 2	Four-lane expressway from Green Sands to SR-59/Bellevue Road	Road Capacity	2025	$79,000	STIP, SB 1, Measure V

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
County	Washington Road Reconstruction	Indiana Rd to SR-59	Road Maintenance	2025	$2,500	SB 1, Measure V
County	SR-33 Centinella Drive Right Turn Lane	In Santa Nella, Construction of separate right turn lane on SB SR-33 at intersection with Centinella Drive	Road Ops/Safety	2023	PSR Only	Measure V
County	Campus Parkway, Phases 2 and 3	Four-lane expressway from Childs Ave to Yosemite Ave	Road Capacity	2023	$90,000	SB 132
County	Campus Parkway, Phase 4	Four-lane expressway Yosemite Ave to U.C. Merced	Road Capacity	2025	$25,000	SB 132; Local
County	LaGrange Road Rehabilitation	SR-59 to County Line	Road Maintenance	2025	$3,250	SB 1, Measure V
County	Minturn Road Rehabilitation	Le Grand Rd to County Line	Road Maintenance	2025	$2,500	SB 1, Measure V
County	Cunningham Road Rehabilitation	SR-140 to Santa Fe Ave	Road Maintenance	2025	$2,250	SB 1, Measure V
County	Westside Blvd Rehabilitation	SR-165 to Central Ave	Road Maintenance	2025	$3,850	SB 1, Measure V
County	Oakdale Road Rehabilitation	SR-59 to County Line	Road Maintenance	2025	$4,000	SB 1, Measure V
County	Dickenson Ferry Rd Rehabilitation	SR-59 to Quinley Avenue	Road Maintenance	2025	$1,400	SB 1, Measure V
County	Highway Bridge Program	Highway Bridge Program	Road Ops/Safety	2030	$19,000	HBP, Local
				County Total Tier I Projects	**$249,275**	
Caltrans	D10 Bridge Substructure Repairs	In Merced, San Joaquin, Mariposa and Stanislaus Counties, on various routes at various locations. Scour mitigation and preventative structural maintenance measures at thirteen bridges	Road Maintenance	2020/ 2021	$7,207	SHOPP
Caltrans	Route 99 Repair and Upgrade of CVEF	Near Chowchilla, at Chowchilla River, repair and upgrade Commercial Vehicle Enforcement Facility (CVEF).	Road Ops/Safety	2024/ 2025	$7,764	SHOPP
Caltrans	John Erreca Roadside Rest Area	Near Los Banos and Firebaugh, at the John "Chuck" Erreca Safety roadside Rest Area (SRRA). Rehabilitate northbound and southbound SRRA facilities.	Road Ops/Safety	2020/ 2021	$30,973	SHOPP

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
Caltrans	MER 33 Curb Ramps	In and near Dos Palos, from Christian Avenue to north of Santos St; also in Gustine on Route 140 from east of Jensen Rd to 2nd St (PM 4.8/6.2). Upgrade facilities to Americans with Disabilities Act (ADA) standards	Active (Ped/Bike)	2022/ 2023	$9,738	SHOPP
Caltrans	Merced Pavement Anchor Project	Near Merced, from Route 152 to Reilly Road. Rehabilitate pavement, upgrade guardrail and lighting, replace sign panels, construct rumble strips, rehabilitate drainage, replace one bridge, and rehabilitate two bridge decks	Road Maintenance	2023/ 2024	$27,554	SHOPP
Caltrans	SR-59 Intersection Control	Near the City of Merced, at the intersection with Gerald Ave. Intersection improvements	Road Ops/Safety	2023/ 2024	$10,140	SHOPP
Caltrans	Merced Seismic Restoration	In Merced County, on Routes 152, 140, and 59 at various locations. Seismic retrofit and bridge rail upgrade of seven bridges	Road Maintenance	2022/ 2023	$22,582	SHOPP
Caltrans	MER-99 Install Median Barrier	In and near the City of Merced, from north of the Madera County line to south of East Childs Avenue. Construct Median Barrier	Road Ops/Safety	2023/ 2024	$17,607	SHOPP
Caltrans	Atwater Bridge Repair	In Atwater, at East Atwater Overhead No. 36-0126L/R; also at West Atwater Overhead No. 39-128L/R (PM 23.47). Apply polyester concrete overlay to bridge decks. (Bridge deck preservation)	Road Maintenance	2022/ 2023	$4,531	SHOPP
Caltrans	Merced 99 Guardrail	Near Atwater, from south of Westside Boulevard to south of Hammatt Avenue. Upgrade guardrail to current standards.	Road Ops/Safety	2022/ 2023	$7,652	SHOPP
Caltrans	MER 140 Safety Devices	In and near the cities of Gustine and Merced, from Outside Canal Bridge No. 39-0055 to 1.3 miles west of Mariposa County line, at various locations. Replace	Road Mainten- ance	2021/ 2022	$9,113	SHOPP

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
		bridge approach guardrail on two bridges and removal of obstructions from clear recovery zone at twelve locations				
Caltrans	MER 140/165 Mobility Improvements	Near Hilmar, at the intersection of Route 140 (PM 16.0/16.5) and Route 165 (PM 26.6/27.1). Install a signal with dedicated left-turn lanes or construct roundabout	Road Ops/Safety	2023/ 2024	$9,871	SHOPP
Caltrans	MER 140 Planada Intersection	Near Planada, from west of Plainsburg Road to Sutter Street. Intersection Improvements	Road Ops/Safety	2023/ 2024	$11,760	SHOPP
Caltrans	SR-152 Median Barrier	Near Los Banos , from 0.8-mile west Basalt Road to Route 5. Construct median barrier	Road Ops/Safety	2023/ 2024	$9,865	SHOPP
Caltrans	STAA Truck Turning Radius Improvement	Near Los Banos, at Route 33 interchange; also on Route 5 (PM 6.3) at Route 165 Interchange. Improve the truck turn radius	Road Ops/Safety	2021/ 2022	$4,529	SHOPP
Caltrans	MER 5 Operational Improvements	In Merced County, on Routes 165, 5, 33, and 140 at various locations. Widen shoulders to accommodate truck turning movements, rehabilitate pavement and drainage system, install Transportation Management System (TMS) elements, and replace signs	Road Ops/Safety	2023/ 2024	$8,460	SHOPP
Caltrans	MER 165 Intersection Control	Near Hilmar, at the intersection with Geer Ave. Intersection Improvements	Road Ops/Safety	2023/ 2024	$14,623	SHOPP
Caltrans	Santa Nella and Los Banos Bridge Overlay	Near Santa Nella and Los Banos, at various locations. Apply polyester concrete overlay to bridge decks. (Bridge Deck Preservation)	Road Maintenance	2021/ 2022	$2,567	SHOPP
Caltrans	Route 59 (PM 14.1 – 14.763) Roadway Preservation	In Merced, from W Childs Ave to Route 99, also on Route 59 from Route 99 to north of Santa Fe Dr (PM 14.78/16.3). Rehabilitate pavement & drainage systems, install TMS elements, upgrade facilities to ADA standards, and	Road Maintenance	2026	20,048	SHOPP

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
		construct sidewalks & bike lanes.				
Caltrans	Route 152 (PM 18.5 – 23.0) Roadway Preservation	In Merced, from W Childs Ave to Route 99, also on Route 59 from Route 99 to north of Santa Fe Dr (PM 14.78/16.3). Rehabilitate pavement & drainage systems, install TMS elements, upgrade facilities to ADA standards, and construct sidewalks & bike lanes.	Road Maintenance	2026	$29,971	SHOPP
Caltrans	SR-152 Signalization at 11th Street	In Los Banos, at the intersection with South 11th Street. Improve safety by installing new traffic signal	Road Ops/Safety	2021/ 2022	$4,041	SHOPP
Caltrans	SR-152 Guardrail	Near Los Banos, from 0.4 mi east of Midway Road to 0.2 mi west of Route 59. Upgrade guardrail to make standard	Road Ops/Safety	2020/ 2021	$4,957	SHOPP
Caltrans	Mercey Springs Road (SR-165) Widening	Pioneer Road to Henry Miller Road	Road Capacity	2035	$20,000	Measure V, SB-1
Caltrans	SR-99 "Livingston Widening" N/B	In and near the City of Livingston to Stanislaus County Line, widen N/B Route 99 from two to three lanes	Road Capacity	2022	$35,000	SB-1 TCEP
Caltrans	SR-99 "Livingston Widening" S/B	In and near the City of Livingston to Stanislaus County Line, widen S/B Route 99 from two to three lanes	Road Capacity	2022	$34,000	STIP
Caltrans	SR-99 "Atwater Widening" (4F to 6F)	In and near the City of Atwater, widen Route 99 from four to six lanes	Road Capacity	2035	$220,000	SB-1, STIP
Caltrans	SR-99 "Merced Widening" (4F to 6F)	In and near the City of Merced, widen Route 99 from four to six lanes	Road Capacity	2030	$200,000	SB-1, STIP
				Caltrans Total Tier I Projects	**$784,553**	
MCAG and Transit	TJPA Microtransit Program (Westside)	On-demand microtransit service on the Westside of the County serving Los Banos, Gustine, Santa Nella, Dos Palos, and Dos Palos Y	Transit	Ongoing	$44,692	LTF
MCAG and Transit	TJPA Microtransit	On-demand microtransit service on the Eastside of the County serving South	Transit	TBD	$47,905	LTF

Agency	Title	Limits/Description	Type	Year	Total Cost ($1,000's)	Funding Sources
	Program (Eastside)	Merced, Atwater, Winton, Franklin-Beachwood, and Delhi. To be implemented in a yet to be determined future year.				
MCAG and Transit	M4 Route Improvements	Improve service to North Merced, the new North Merced Transit Center, new affordable housing projects, and the Navigation Center	Transit	TBD	$2,030	LTF
MCAG and Transit	Planada Route Improvements	Increased frequency between Merced and the communities of Planada and Le Grand	Transit	TBD	$7,309	LTF
MCAG and Transit	Measure V Transit Free Ride Program	Free fare program for Senior, Veteran, and ADA-eligible riders on fixed-route transit services, paratransit, dial-a-ride, and micro transit.	Transit	Ongoing	$7,680	Measure V
MCAG and Transit	MCAG Vanpool Program (dibs)	Vanpooling program through dibs, a joint program with San Joaquin and Stanislaus Counties.	Transit	Ongoing	$4,000	CMAQ
MCAG and Transit	TJPA Outreach and Marketing	For transit service in Merced Region	Transit	Ongoing	$2,500	CMAQ
MCAG and Transit	YARTS Outreach and Marketing	For YARTS transit service area including Merced Region	Transit	Ongoing	$2,125	CMAQ
MCAG and Transit Total Tier I Projects					**$118,241**	
SJRRC	Altamont Corridor Express (ACE) Ceres-Merced Extension	Extension of the ACE commuter rail services from Ceres to Merced, with stations at Turlock, Livingston, Atwater, and Merced. This also includes a layover facility in Merced. Cost included is for the section built within Merced County.	Rail	2029	$100,000	SB 132, TIRCP, CROS, TCEP, INFRA, RAISE, MEGA, Other IIJA Rail Funding
SJRRC Total Tier I Projects					**$100,000**	
Overall Total Tier I Projects					**$1,539,878**	

10. Environmental Justice

An important requirement in preparing the 2022 RTP/SCS is ensuring that Environmental Justice (EJ) is addressed and adhered to in the 2022 RTP/SCS Scenario 3: Preferred Scenario/Connect & Conserve Merced County (or the "Plan"). According to the Environmental Protection Agency (EPA), environmental Justice (EJ) is the fair treatment and meaningful involvement of all people in the development, implementation, and enforcement ofenvironmental laws, regulations, and policies. The emphasis on EJ is intended to protect low-income and minority individuals across the Merced County region by identifying and addressing any disproportionately high and adverse effects of the Plan on minority and low-income populations (i.e., EJ communities).

Introduction

Several federal and state laws and regulations govern how Environmental Justice (EJ) is incorporated into the 2022 RTP/SCS. These include:

- **Title VI of the Civil Rights Act of 1964**, which prohibits discrimination by recipients of federal funds on the basis of race, color or national origin and which ensures that no person is excluded from participation in or denied the benefits of federally funded programs.
- **Section 11135 of the California Government Code**, which expands Title VI protections to prevent discriminations in state activities on the basis of sex, religion, ancestry, ethnic group identification, age, mental disability, physical disability, medical condition, genetic information, marital status, or sexual orientation.
- **Presidential Executive Order 12898**, which require that recipients of federal funding identify and address disproportionately high and adverse human health or environmental effects of their activities on minority populations.
- **U.S. Department of Transportation EJ Order 5610.2(A)**, which specifies that transportation programs must identify and evaluate environmental, public health, and interrelated social and economic effects; propose measures or consider alternatives to avoid or reduce disproportionately high and adverse effects; and obtain public input, including from affected minority and low-income populations, when considering alternatives.

Based on federal and state requirements, MCAG has two primary responsibilities in addressing EJ while developing the 2022 RTP/SCS. First, MCAG must ensure there is equity in the distribution of potential benefits and burdens resulting from the proposed transportation investments identified in the 2022 RTP/SCS. Second, MCAG's planning process itself must provide an equal opportunity for all segments of the population to provide input into the transportation planning process. This second requirement is implemented via MCAG's robust outreach policies and practices, which are discussed in Chapter 11. The focus of this chapter is the first requirement.

The goal of this process is to ensure racial, low-income, and geographic equity of transportation investment benefits. Populations considered high minority or low-income should realize equal levels of benefit from transportation investments compared to other population groups. Transportation investments should not be concentrated in one geographic region, but rather should be fairly distributed. Finally, all members of the community must have an equal opportunity to provide input into the transportation planning process.

This equity analysis involves three key steps:

1. Collect socio-economic data on target populations;
2. Identify and locate low-income and minority populations (i.e., EJ communities or EJ areas)
3. Quantitatively assess the benefits and burdens of the transportation plan with respect to EJ communities.

Merced County Demographic View

The environmental justice equity analysis focuses on minority and low-income residents. MCAG uses the Census Block Group, the smallest level of geography that cover both of these data sets.

Race/Ethnicity

Minority persons living within Merced County are those who identify as Hispanic or Latino of Any Race, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, or a combination of these or other races. The U.S. Census estimates for Merced County indicate the minority grouping makes up the majority of the total population for Merced County at 73.1%. Notably, the Hispanic or Latino of Any Race population has grown more than any other population when compared to previous American Community Surveys.

Minority population areas in the Census Block Groups are defined as containing 60% or more minority populations.

Merced County Racial/Ethnicity Demographics

Data based on 2020 American Community Survey 5-Year Estimates.

https://www.census.gov/data.html

Table 10.1 – Merced County Racial/Ethnicity Demographics

Group	Population	Population %	Environmental Justice %
White Alone	73,587	26.9%	
Hispanic or Latino of Any Race	164,836	60.2%	
Asian Alone	20,335	7.4%	
Black or African American Alone	7,626	2.8%	
American Indian and Alaska Native Alone	1,014	0.4%	**73.1%**
Native Hawaiian and Other Pacific Islander Alone	700	0.3%	
Other Alone	360	0.1%	
Two or More Races	5,203	1.9%	
Totals	**273,661**	**100%**	

Low Income/Poverty

Low-income households with incomes that fall below the federal poverty level (FPL) are classified as poor. The U.S. Department of Health and Human Services, per their Poverty Guidelines for 2020, has determined that the FPL for a family of four is $26,200. About 23.8% of the Merced County households make less than $26,200 annually, which classifies these households as the poverty group.

Here low-income refers to households with incomes that fall below 200 percent of the federal poverty level (200% of ~$26,200/household = $52,400, rounded to $50,000 to match Census data categories). This group accounts for 44.9% of Merced County households.

Merced County Income Demographics

Data based on 2020 American Community Survey 5-Year Estimates.

https://www.census.gov/data.html

Table 10.2 – Merced County Income Demographics

Income and Benefits	Households	Households %	Low Income %	In Poverty %
Less than $10,000	4,472	5.5%		
$10,000 to $14,999	4,228	5.2%		**19.9%**
$15,000 to $24,999	7,480	9.2%	**44.9%**	
$25,000 to $34,999	7,887	9.7%		
$35,000 to $49,999	12,440	15.3%		
$50,000 to $74,999	16,180	19.9%		
$75,000 to $99,999	9,838	12.1%		
$100,000 to $149,999	11,139	13.7%		
$150,000 to $199,999	3,903	4.8%		
$200,000 or more	3,740	4.6%		
Total Households	81,306	100%		

Analysis Methodology

This environmental justice equity analysis below examines the benefits of transit operations, two near-term pedestrian/bicycle projects, eleven regionally significant roadway projects, and five regionally significant transit projects.

MCAG staff used the Geographic Information System (GIS) to overlay the RTP investments with the locations of these high minority and low-income groups (using Census Block and Block Group geographies and demographic data). For the transit operations investment, a ½-mile walking-distance buffer of the fixed-route transit service and a ¾-mile buffer representing paratransit service area were overlaid with the locations of these interest groups. For the pedestrian/bicycle projects, their locations were overlaid with the locations of these interest groups. Mapping eleven regionally significant roadway projects and five regionally significant transit projects with the interest groups establishes the equitably beneficial impact of the projects.

2022 RTP/SCS Exemplary and Regionally Significant Projects

Transit operations, exemplary pedestrian/bicycle projects, and regionally significant roadway and transit projects have been programmed and identified in the RTP/SCS (Chapter 9). Several near-term and ongoing projects are analyzed here for environmental justice.

"The Bus," operated by the Transit Joint Powers Authority for Merced County, is the regional bus transit operation. Transit operation investment pays for fixed urban and rural inter-community bus route service for most of the major population areas. Transit also provides for Americans with Disabilities Act (ADA), seniors, and veterans with paratransit service, which represents the ¾-mile area from the fixed-route service. Note that the transit service, with its limited Federal funding, must meet farebox revenue thresholds to justify system routes. Microtransit service, which was recently launched to provide more cost-effective transit, provides a shared, on-demand transit services to the City of Los Banos and the rural communities of Dos Palos, Gustine, and Santa Nella. The bus transit operation, "The Bus," connects to major shopping centers (like Target and Wal-Mart), health-care facilities (such as hospital and clinics), the flea market, Merced College, UC Merced, and low-income service providers (like the Merced County Human Services Agency). Throughout the COVID-

19 Pandemic, "The Bus" had continued service by providing accommodations to riders needing essential transit. Per Measure V, Merced County's ½ cent transportation sales tax, the Transit Joint Powers Authority for Merced County receives funding annually to provide free fares on the "The Bus" fixed-routes to seniors, veterans, and ADA eligible individuals with disabilities. This free service began in July 2017 and was expanded to include paratransit, dial-a-ride, and microtransit in October 2021. The expansion of the free fare program means that veterans, seniors, and ADA-eligible passengers throughout the county now benefit from a completely free transit system, thus empowering them to travel independently throughout the region without having to worry about finding a way to pay for their bus fare. As of February 2022, "The Bus" had provided more than 641,693 free rides to eligible passengers in Merced County. CMAQ also funds countywide public outreach, education, and marketing efforts to promote and increase transit ridership on "The Bus." During the pandemic, these outreach efforts will continue to notice the populace of continued safety measures to protect the drivers and the riders.

The primary goal of the CMAQ program is to fund eligible projects that will relieve congestion and reduce ozone and particulate matter emissions. The five programmed CMAQ projects are new pedestrian/bicycle facilities. Measure V Alternative Modes Set-Aside funding has also been funding over a hundred various projects- new pedestrian/bicycle facilities, ADA compliancy, and maintaining/repairing existing facilities throughout the region.

GIS Overlay Observations

Transit

"The Bus" fixed-route service operates in more-densely populated cities and communities along primary corridors in order to meet the demands of the majority of transit riders. Paratransit service, for those riders with disabilities, seniors and veterans, operates for the area within ¾-mile from fixed routes. Microtransit provides a shared, on-demand transit service that also provides connection to fixed route service for the provides transit services to the City of Los Banos and the rural communities of Dos Palos, Gustine, and Santa Nella.

Per transit funding requirements, the transit operations must demonstrate cost-effectiveness (i.e. meeting farebox recover ratio) for both urban and rural transit services.

Since October 2021, "The Bus" transit system- fixed-routes, paratransit, dial-a-ride, and microtransit- has been free to seniors, veterans, and ADA eligible individuals with disabilities. As of February 2022, "The Bus" had provided more than 641,693 free rides to eligible passengers in Merced County. It is reasonable to assume that those eligible for this free transit service are categorized as low-income. it is important to note that the region and its transit provider are investing other, non-federal funds to provide transportation mobility to the low-income group.

Transit Investment Overlaid with High Minority Areas

The GIS mapping of the ½-mile walking distance buffer of the fixed-route and the ¾-mile from fixed-route paratransit area with the determined high minority areas shows that transit operations do provide equitable service to this interest group in the populated areas.

Table 10.3 exhibits the transit service benefit to the overall minority population as a percentage of the total population with walkable access to transit service. As shown, the percentage of minority population serviced by the transit operation is 74.7%. This is slightly higher than the 73.1% share of the population that is minority.

Table 10.3 – Minority Population Equity Transit Service Benefit

	Transit Service
Minority Population	165,947
Population Served by "The Bus"	222,175
% Minority Population	74.7%

Transit Investment Overlaid with Low-Income Areas

The GIS mapping of the ½-mile walking distance buffer of the fixed-route and the ¾-mile from fixed-route paratransit area with the determined low-income areas shows that transit operations do provide equitable service to this interest group in the populated areas.

Table 10.4 shows the transit service benefit to the low-income households as a percentage of the total number of households with walkable access transit service. As shown, the percentage of low-income households serviced by the transit operation is 47.7%, higher than the low-income share of the overall population (44.9%)

Table 10.4 – Low-Income Household Equity Transit Service Benefit

	Transit Service
Low-Income Households	31,030
Households Served by "The Bus"	65,074
% Low-Income Population	47.7%

Pedestrian/Bicycle Projects

Pedestrian/bicycle projects improve access for those who cannot drive, and also offer Merced County residents with cars an alternative to driving their vehicles. Some of the pedestrian/bicycle projects provide driving alternatives during peak times in close proximity to schools. Other projects include installing bike lanes to visibly distinguish these mode corridors to motorists, so that they are more aware of bicyclists sharing the roadway.

Several different revenue sources provide funding for these pedestrian/bicycle projects: Congestion Mitigation Air Quality (CMAQ); State Highway Operation and Protection Program (SHOPP); and local Measure V. Of note, Measure V has a 10% set-aside, estimated at $1,800,000 annually, for alternative mode projects.

Pedestrian/Bicycle Projects with High Minority Areas

The GIS mapping of the locations of near-term pedestrian/bicycle projects with the determined high minority areas displays equitable project benefit to this interest group in the populated areas. Projects are around the county covering a variety of high minority areas within cities and the unincorporated communities on both the Eastside and Westside.

Pedestrian/Bicycle Projects with Low-Income Areas

The GIS mapping of the locations of the pedestrian/bicycle projects with the determined low-income areas displays equitable project benefit to this interest group in the populated areas. Projects are around the county covering a variety of low-income areas within cities and the unincorporated communities on both the Eastside and Westside.

Childs Avenue Multiuse Path Between Weaver Middle School and Golden Valley High School

A notable pedestrian/bicycle improvement project is the Childs Avenue Multiuse Path, between Weaver Middle School and Golden Valley High School in the City of Merced. School children currently walk and bike on the dirt shoulders along the busy street. City leaders and both schools were strongly in favor of providing a safe route to school for their students.

The project benefits an area, which is categorized by CalEPA CalEnviroScreen 4.0 as a SB 535 Disadvantaged Community that ranks among highest scoring 25% of census tracts and scores in the top 5% of the pollution burden indicator.

The U.S. Census Tract demographic data indicate the area as 59.8% Hispanic, 11.5% Asian, 4.8% African American, 2.1% Other, and 21.8% White.

Understanding that this was a worthwhile project, the MCAG Board authorized the programming of CMAQ funds to cover 88.53% of the project cost to cover engineering and construction costs.

Equity Project Benefits to Minority Population and to Low-Income Population

The project will benefit the minority and low-income populations in the City of Merced and specifically those in Southeast Merced. This project will provide a safer, off-street route to the middle and high schools for walking and bicycling students. With the safe option, parents will feel more comfortable with their children walking and bicycling to school, and not need to drop them off.

Impacts on Minority Population and on Low-Income Population

The project will only impact the frontages of some lots and will not require any relocations. Many property owners have already expressed support of this project. The project aims to encourage walking or bicycling, thus reducing harmful emissions in the community.

Benefits Analysis of Regionally Significant Projects

The RTP/SCS includes several major roadway projects as well as five significant transit projects. Several projects related to widening of SR 99 were described In **Chapter 3** along with five major transit projects related to the ACE extension and expansion of microtransit. Other major transportation projects and their EJ implications are described below.

Atwater-Merced Expressway

The Atwater-Merced Expressway, or AME, is the construction of a new expressway from State Route (SR-) 99 to connect with Santa Fe Drive and Bellevue Drive. This project will provide a direct expressway from SR-99 to the Castle Commerce Center and the University of California, Merced. This is a phased project, and the first segment between SR-99 and Green Sands Avenue near Atwater has been completed. Phases 1B and 2 is included in the 2022 RTP/SCS. Phase 1B will extend the initial segment from Green Sands Avenue to Santa Fe Drive and will include an overpass over the Burlington Northern Santa Fe (BNSF) Railway. Phase 2 will further extend the expressway to Bellevue Road and will provide a connection to the U.C. Merced. Once completed, the Atwater-Merced Expressway will form the northwestern section of the Merced Loop system.

As shown on the maps in **Appendix P**, Phases 1B and 2 extend northeasterly from Green Sands Avenue to connect with Bellevue Road, and impact few existing homes.

Equity Project Benefits to Minority Population and to Low-Income Population

For those with access to vehicles, the project will benefit those minority and low-income populations residing close to access points in the City of Atwater and the City of Merced. Students at the University of California Merced will have a direct connection to the satellite campus at Castle Airport. Populations in both Atwater and Merced will also have less congested surface roads because this project will divert traffic off local circulation roads. Currently, all traffic to the Castle Commerce Center traverse on local surface streets, Buhach Road and Gurr Road, passing neighborhoods and schools. For those without access to vehicles, the project will provide connections via UC Merced's bus system and potential future "The Bus" fixed-route transit service along with vanpooling and ridesharing. The overpass over the BNSF Railway will provide increased safety for vehicles, transit, and both freight and intercity rail service.

Impacts on Minority Population and on Low-Income Population

This project requires acquisition of new right of way in largely rural areas, and therefore, will have minimal impacts on minority and low-impact populations. This project will redirect traffic off local surface roads that passes through minority and low-impact population neighborhoods. This project will divert through-traffic away from these areas resulting in less harmful emissions.

Los Banos Pioneer Road Complete Streets Project

The Pioneer Road Complete Streets Project includes conversion of the existing two-lane road into a four-lane road with a center median and complete streets elements, including pedestrian/bicycle facilities. The project will also extend Pioneer Road and will tie back to SR-152/Pacheco Boulevard. This will alleviate unsafe and unhealthy congestion on the SR-152/Pacheco Boulevard Corridor. Once constructed, transit service on this corridor will be explored. As shown on the maps in **Appendix P**, the Pioneer Project is on the southern outskirts of Los Banos and will not impact existing homes. Phase 1 of this project includes signalization, traffic flow improvements, and adding sidewalks and Class I bike path at the intersection of Pioneer Road and Ortigalita Road.

Equity Project Benefits to Minority Population and to Low-Income Population

This project will benefit minority and low-income populations through providing better connections throughout the City of Los Banos. For those without access to vehicles, the improved pedestrian/bicycle facilities will provide safer transportation options. The capacity-increasing elements of the project are planned to reduce future congestion and provide relief for the current congestion on SR-152/Pacheco Boulevard. Congestion reduction will provide additional benefits to existing and future transit services.

Impacts on Minority Population and on Low-Income Population

This project's scope passes through two different areas, a residential area (the existing Pioneer Road) and a rural area. Within the residential area, the project will be largely confined to the existing right-of-way of the current Pioneer Road. The extension of Pioneer Road will pass through rural areas and land owned by water districts, thus will not require major relocation of any minority or low-income populations. Congestion relief through the project will also move through-traffic away from major minority and low-income neighborhoods near SR-152.

Five other regionally significant roadway projects include:

1) Bellevue Road Widening

   This project is part of the Merced Loop System (see above and **Chapter 3**) which is envisioned to be 4-lanes throughout. Bellevue Road Widening would widen the existing 2-lane facility to a 4-lane facility. The Atwater-Merced Expressway, Phases 1B and 2, would provide the connection Bellevue Road from SR 99. Capacity on Bellevue should be expanded to accommodate North Merced and U.C. Merced travelers.

2) SR 59 Widening – 16th Street to north of Santa Fe Avenue

   The SR 59 Widening project addresses major congestion during peak periods at both termini. The congestion issue at Santa Fe worsens with trains running on the BNSF rail line. MCAG has committed $6.5 million in Measure V funding to the City of Merced. The City will provide remaining funding to implement the project. The project is currently in environmental review and design, and is expected to be construction-ready in FY 25/26.

3) Mission Ave Widening

   Mission Avenue Widening is the southern part of the Merced Loop System (See **Chapter 3**) Again, this entails the widening of the existing 2-lane facility to a 4-lane facility. MCAG has recently provided regional sales tax measure, Measure V, funding to the City of Merced to prepare the Project study Report Equivalent to scope the widening of the segment between SR 99 and SR 59. Once this scoping/initiation document is complete, the City of Merced and MCAG will work towards identifying funds for implementation.

4) SR 165 Widening in Los Banos

   This project looks to widen SR 165 through the City of Los Banos to accommodate local traffic as well as thru traffic (especially goods movement) between the two major State Corridors, Interstate 5 and State Route 99.

5) SR 59 Widening – Santa Fe to Bellevue Road

A portion of the SR 59 Widening project is included in the workings of Project #2 listed above. The SR 59 Widening will extend north of Santa Fe to include the replacement of the Black Rascal Creek bridge crossing. Currently, that crossing is unsafe due to being narrow and not having shoulders. This portion of Project #5 has MCAG's commitment of $6.0 million of Measure V funding to the City of Merced.

Each of the regionally-significant project was buffered by ½ mile. Census block groups that intersected the project buffer were selected for tabulation.

Table 10.5 shows the impact and benefit profiles of 11 key capacity-increasing roadway projects and five major transit projects included in this RTP. **Table 10.5** shows that the major roadway benefits low-income and high-minority populations based on their access to these facilities. The populations of the buffer areas with best access to the new facilities are, on average, slightly higher than the county as a whole in terms of both minority and low-income income populations (the buffer areas are 76 percent high-minority census block groups, while the County is 73% minority). Similarly, the buffer areas are 47% low-income households, while the county as whole has 45% low-income households.

Detailed maps have been placed in **Appendix P**. These maps juxtapose low-income and high-minority communities with these major regional transportation facilities. EJ impacts of the regionally significant roadway projects were also looked at. As shown on the maps in Appendix P, they have benefits to the EJ groups and will create minimal negative impacts (very unlikely to require relocations or cause any obstacles to accessing jobs/services).

Table 10.5 – Benefits of Major RTP/SCS Transportation Projects

Major Roadways Projects	Total Pop	Minority Pop	% Minority	Total HH	Low Income HH	% Low Income HH
1. Atwater - Merced Expressway Phases 1B & 2	11,576	7,629	66%	3,060	1,149	38%
2. Bellevue Rd Widening	16,651	11,831	71%	3,972	976	25%
3. Campus Parkway (Phases 1-4)	27,638	18,842	68%	7,360	2,956	40%
4. SR 59 Widening - 16th St to north of Santa Fe	21,041	16,437	78%	6,345	3,017	48%
5. Mission Ave Widening	14,054	11,951	85%	3,251	1,892	58%
6. Pioneer Road Widening Project	24,124	18,057	75%	6,684	2,088	31%
7. SR 165 Widening in Los Banos	32,335	25,364	78%	9,146	3,887	42%
8. SR 59 Widening - Santa Fe to Bellevue Rd	16,640	12,759	77%	2,415	2,045	85%
9. SR 99 Atwater Widening	21,714	13,498	62%	7,008	3,123	45%
10. SR 99 Livingston Widening	32,268	26,976	84%	8,365	3,582	43%
11. SR 99 Merced Widening	33,716	27,792	82%	10,187	6,677	66%
Major Transit Projects						
12. Proposed ACE Rail Station - Livingston	13,011	11,922	92%	3,356	1,629	49%
13. Proposed ACE Rail Station - Atwater	8,863	5,722	65%	2,930	1,456	50%
14. Proposed Multi-Modal Hub Station for HSR, San Joaquins, and ACE – Merced	10,776	8,847	82%	3,647	2,399	66%
15. Microtransit - Eastside	61,129	46,974	77%	17,681	7,774	44%
16. Microtransit - Westside	103,342	75,473	73%	29,261	13,421	46%
17. **Average Demographic served by Key Projects**	28,055	21,255	76%	7,792	3,629	47%
Regional (Countywide) Averages			73%			45%

Conclusion

The region-wide EJ analysis, based on analysis of the buffer zone populations most likely to benefit from transportation facilities, indicates that the Plan will not have a disproportionate impact on the identified EJ communities. Regionally, the amount of benefit within low-income and minority populations is proportional to non-EJ communities, if not higher, with better access to transit and the roadways. Additionally, the Plan will result in a greater mix of housing and more affordable housing (both single-family and multi-family) than the Baseline Scenario.

Furthermore, the Plan reduces congested lane miles, and vehicle hours of delay for all users of the transportation system while increasing the amount of funding available for alternative modes of transportation, including transit, bicycling and walking – which benefit low-income and minority populations to a greater degree in the Merced region.

11. Public Participation

This plan was developed in partnership with Merced County residents through an extensive program of publicinvolvement including several workshops, public presentations, and solicitations for input. A variety of outreach strategies were employed to maximize participation from all population groups regardless of age, gender, race, ethnicity, national origin, or political affiliation. Much of the outreach effort specifically targeted disadvantaged stakeholder and community organizations. In addition to workshops, all RTP-specific materialswere translated in Spanish. This section highlights key public outreach components of the Plan, and is further described in **Appendix O.**

Public Outreach Goals

The following goals informed the engagement and participation plan:

Goal 1: To engage the broadest cross section of Merced County residents, businesses, and transportation providers for planning for our future transportation needs.

Goal 2: To make the planning process accessible, interactive, and engaging.

To achieve these goals, MCAG hosted public presentations and workshops throughout the Plan developmentprocess. Various outreach strategies were employed to ensure inclusivity across all sectors and populations within the County.

Outreach efforts included, but were not limited to:

- **Public workshops**
- **Advisory committee presentations**
- **Community-based outreach events**
- **Online surveys**
- **Public scoping meeting for the Environmental Impact Report(EIR)**
- **Public hearings**

The key message behind these outreach efforts was to inform the public on the purpose and process behind the RTP/SCS, as a legally required process to identify areas to accommodate all the region's population for the next 24 years. Presentations provided insight into the development of the scenarios to be examined as part of the RTP/SCS, as well as proposed transportation improvements that will benefit the region. Ultimately,workshops were held to present results of the scenario chosen for the 2022 RTP/SCS (the Plan), as well as to highlight various environmental benefits associated with the Plan. Staff presented the RTP/SCS status update to the MCAG Citizens Advisory Committee at the April 1 meeting and presented performance metrics at the May 6 meeting.

Outreach highlights include the following:

- **Two Public Workshops**
- **One Virtual Workshop and on hybrid workshop (in-person)**
- **Four meetings of the RTP/SCS Advisory Committee of 23 diverse stakeholders**
- **Public Presentations to MCAG Committees and Board**
- **Online surveys**
- **Project website averaging 250-350 unique visits per month**

An RTP/SCS Advisory Committee was formed in January 2022 and met four times through April. It included representatives of:

- The MCAG Board (2)
- MCAG Citizens Advisory Committee
- Area Agency on Aging
- Caltrans
- County of Merced
- City of Gustine
- City of Merced
- City of Los Banos
- City of Los Banos
- City of Livingston
- City of Merced Airport Authority
- San Joaquin Valley Rail Commission
- Merced Bicycle Coalition
- Sierra Club
- The Bus
- UC Merced
- League of Women Voters
- United Way
- Valley Land Alliance
- Merced Farm Bureau
- Healthy House
- Cultiva la Salud

The Advisory Committee provided valuable input into the types of projects and policies that should be included in the Plan. In the final meeting on April 29, the Committee selected Scenario 3, Conserve & Connect Merced County as their preferred Scenario. MCAG's Citizens Advisory Committee also recommended Scenario 3 as the Preferred RTP/SCS Scenario at its May 6 meeting.

Public Workshops

Community workshops were held during the course of the Plan's development to ensure that all interest groups were heard and kept informed, including seniors, veterans, people with disabilities, and minority residents. For each workshop, the public was informed about the date and location of the event through the various outreach sources mentioned above.

Community workshops were held twice in order to gather public input on key elements of the Plan. The first meeting, held March 8, was a virtual meeting and introduced attendees to the RTP/SCS planning process. The second on April 26 the public to engage with the RTP/SCS planning process and provide their input on the three land use and transportation improvement scenarios. The schedule of workshops was as follows:

Workshop 1

- Tuesday, March 8, 2022
  6:00 – 7:30pm
- Virtual Zoom workshop
- Simultaneous Spanish Interpretation Services Offered
- Explained the purpose and process of the RTP/SCS
- Workshop polling focused on transportation investments, sustainability, and housing issues

Workshop 2

- Tuesday, April 26, 2022
- Virtual, with in-person cohort at MCAG offices
- Simultaneous Spanish Interpretation Services Offered
- Polling on SCS Alternative Scenarios
- Attendees selected Scenario 3: Connect & Conserve Merced County

Project Website

The website provided a 2022 RTP/SCS summary, overview, and information on the background and purpose of the Plan. Agendas and notices were posted on the website to inform the public about upcoming events, meetings, and workshops. In addition, presentations and relevant materials were uploaded to the website for public access. An online survey was also accessible at the website for several weeks.

Appendix O

Survey results and specific comments received from the public during workshops are provided in **Appendix O**.