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1. Executive Summary

The Merced County Association of Governments (MCAG) has prepared this 2018 update to the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) to address current regional goals and priorities for our growing and evolving communities. Ultimately this plan seeks to ensure that the Merced County transportation system will continue to operate efficiently over the next 25 years 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 Commuter 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), which requires a performance-based approach to the Plan’s development.
Preferred Scenario

The 2018 RTP/SCS is based on a preferred land use and transportation investment scenario, referred to as Scenario 2: Preferred Scenario/Infill Emphasis (or the “Plan”), which defines a pattern of future growth and the accompanying transportation system investment for the region. The Plan is compared to Scenario 1: Business as Usual (or “BAU”), for the purpose of demonstrating how the Plan will affect the region.

The Plan includes comprehensive improvements to the regional and local transportation networks, referred to as the Tier I Project List. The Plan has a focus on infill development in downtowns and centers in close proximity to jobs and services. In addition, the Plan emphasizes transportation investments in active transportation facilities to improve bicycle and pedestrian mobility.

Implementation of the Plan, as compared to BAU, 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;
- An increase in total transportation investments in bicycle and pedestrian related projects, and
- Less intensive land development and less agriculture land converted for new development.

Goals

The goals for the 2018 RTP/SCS were established to meet the regulatory requirements of the FAST Act, the Clean Air Act, Title VI of the Civil Rights Act, SB 375, the California Complete Streets Act, and the California Environmental Quality Act. They were tailored specifically to the unique needs of Merced County and the 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. Objectives and actions are presented in Chapter 9.

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

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

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

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

6. 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.
7. **Energy**: Reduce usage of nonrenewable energy resources for transportation purposes.

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

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

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

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

12. **Sustainable Communities**: Reduce per capita greenhouse gas emissions by coordinating compact growth with 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.

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

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

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

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

17. **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 investments.

18. **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.

**Regional Transportation System**

Merced County is served by a multimodal transportation system that incorporates roadways, railways, airports, pedestrian and bicycle facilities to aid in 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 multi-modal 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 2018 MCAG RTP/SCS. There is no single mode or solution that can meet the region’s transportation needs. The regional transportation system of state highways is shown in Figure 1.1.
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 six local jurisdictions and Merced County. **Table 1.1** provides a Pavement Condition Index (PCI) for each member agency in Merced County. As shown, all of Merced County’s local jurisdictions have Poor or At-Risk pavement conditions, except for the City of Livingston. This suggests a great need for a pavement preservation effort in Merced County.

**Table 1.1 – Existing Pavement Conditions**

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Pavement Condition Index (PCI)</th>
<th>Condition</th>
<th>Maintained Centerline Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atwater</td>
<td>61</td>
<td>At Lower Risk</td>
<td>103</td>
</tr>
<tr>
<td>Dos Palos</td>
<td>49</td>
<td>Poor</td>
<td>23</td>
</tr>
<tr>
<td>Gustine</td>
<td>61</td>
<td>At Lower Risk</td>
<td>22</td>
</tr>
<tr>
<td>Livingston</td>
<td>71</td>
<td>Good</td>
<td>47</td>
</tr>
<tr>
<td>Los Banos</td>
<td>61</td>
<td>At Lower Risk</td>
<td>130</td>
</tr>
<tr>
<td>Merced</td>
<td>49</td>
<td>Poor</td>
<td>274</td>
</tr>
<tr>
<td>Merced County (Unincorporated)*</td>
<td>50</td>
<td>At Higher Risk</td>
<td>2234</td>
</tr>
</tbody>
</table>

*PCI based on low range value; *PCI based on high range value

Sources: California Statewide Local Streets and Roads Needs Assessment, 2016; Caltrans Highway Performance Monitoring System (HPMS), 2016.

Transit Operations and Cost

"The Bus" is a countywide consolidated transit program administered and governed by the Transit Joint Powers Authority for Merced County (TJPAMC or TJPA). The Bus was formed from four 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 1,802 injuries or fatalities in 2015, ranking 26th out of 58 counties in California for the highest number of injuries and/or deaths per capita. Of these injuries or deaths, 286 (or 16 percent) resulted from an alcohol related collision, the 5th highest per capita out of California counties. A total of 58 (or 3 percent) involved a bicyclist, and 94 (or 5 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 Federal 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 25 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 needs, and increase travel demand. Implementation of the Plan 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 BAU 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 107,000 persons, 23,000 jobs, and 34,000 households by 2042.

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 from neighboring Bay Area and Sacramento counties. By year 2042, Merced County is projected to grow by approximately 107,000 persons (a 38% increase) (see Figure 1.2), 34,000 households (a 40% increase), and 23,000 jobs (a 28% 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 BAU.
Transportation System Operations

Even with those changes, long-distance commuting is likely here to stay. Vehicle miles traveled (VMT) 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. Figure 1.3 presents the trend in VMT growth from 2001 to 2016. As shown, VMT within Merced County has steadily increased by over 21 percent within this 15-year period with only temporary decreases experienced during the Great Recession years (between 2006-08) and again in 2016. In addition, the rate of VMT growth will lesson slightly relative to the last 15 years of historical growth (just greater than one percent per year) to increase by approximately 27% under the Plan by 2042.

Figure 1.3 – Vehicle Miles Traveled (VMT) Trend

Under future (2042) conditions, operations on the region’s roadway network are projected to worsen including segments of SR 99, SR 140, SR 59 and SR 165 which are determined to be deficient by various performance metrics. In addition, the volume on Santa Fe Drive between the Stanislaus County Line and SR 59 is projected to exceed its capacity by 2042. Appendix T provides additional detail regarding existing and future roadway operations in Merced County. As shown in Figure 1.4, VMT per capita is projected to decline under the Plan.

Figure 1.4 – Vehicle Miles Traveled (VMT) Per Capita Forecast
Alternative Transportation
Transportation facilities that encourage non-vehicular 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 $624 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 BAU. 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 $376 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 2018 MCAG RTP/SCS financial revenue forecast identifies approximately $3.965 billion in available funding from federal, state and local sources through fiscal year 2042, as shown in Figure 1.5.

**Figure 1.5 – Revenue Forecast**

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, carbon monoxide (CO), and particulate matter (both PM10 and PM2.5).

- **Highway Bridge Program**, which provides for construction and maintenance of bridges that were not on the State Highway System, such as bridges on rural minor collectors and local roads.

- **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.

**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 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, and $100 million for a parkway project at 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 Funding**

- **Measure V Funds** was passed by voters in November 2016 to implement a 30-year, ½ cent transportation sales 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 $15 million per year based on the one-half cent sales tax for an estimated total of $450 million over the course of the measure’s lifetime.

- **Local Transportation Fund (LTF)**, which represents 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.

- **Local Funds (Development Impact Fees and Local General Fund)**, which are collected during the development process, were used to the improve the 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](#) and [Appendix I](#). With funds identified in the investment plan, the 2018 RTP/SCS includes transportation projects that addresses short-term and long-term mobility and safety needs. The Plan includes approximately $1.684 billion in specifically identified project costs (Tier I). Another $2.28 billion in spending is assumed through 2042 on projects yet to be identified. Separately, a Tier II list which includes projects beyond 2042 are included in [Appendix K](#). [Figure 1.6](#) shows how funding is allocated by project type. [Figures 1.7 (a-f)](#) present the locations of the Plan projects by jurisdiction.
Figure 1.7a – Countywide Project Map

Legend
- City Boundary
- County Boundary
- State Highway
- Railroad
- Projects
  - Airport
  - Road Capacity
  - Road Ops/Safety
  - Transit
  - Road Maintenance
  - Complete Streets
  - Bicycle/Pedestrian
  - Roadway Ops/Safety
Figure 1.7b – City of Atwater Project Map
Figure 1.7c – City of Dos Palos Project Map
Figure 1.7d – City of Gustine Project Map
Figure 1.7e – City of Livingston Project Map
Figure 1.7f – City of Merced Project Map
Equity

An important requirement in preparing the 2018 RTP/SCS is ensuring that Environmental Justice (EJ) is addressed and adhered to in the 2018 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 2018 RTP/SCS. Of the nine major roadway projects included in the Tier I Project List, all include portions located within EJ areas, while two are fully in designated EJ areas. The burdens associated with construction and land-use change are therefore distributed between both EJ and non-EJ populations. Nearly 80 percent of users of the new facilities will start or end their trips in EJ areas, which is more than equitable based on the proportion of EJ area households within the county. Similarly, the planned transit service enhancements primarily serve EJ areas within the county. EJ analysis is provided in greater detail in Chapter 10.

Implementation of 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.
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 2018 RTP/SCS planning process focused on 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. Much of the outreach effort specifically targeted disadvantaged communities. In addition to workshops, all RTP-specific handouts were translated in Spanish. Public outreach is discussed in greater detail in Chapter 11 and Appendix P.

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

Two (2) bilingual (Spanish and English) virtual workshops were held and posted to the project website. These workshops were promoted through eNews, MCAG Newsletter, and at all community presentations.
Air Quality and Climate Change

Pursuant to Section 176 (c)(4) of the 1990 Federal Clean Air Act Amendments (CAAA), 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 remains 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 1.8.

![Figure 1.8 – RTP/SCS GHG Reduction Per Capita](image)

Conclusion

The 2018 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 spur growth and economic development, and improve the 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.
2. Introduction

The Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS, or plan) specifies the policies, projects, and programs necessary over a 25-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 2042.

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 2018 RTP/SCS was developed through extensive 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 for the development of the 2018 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 2018 RTP/SCS is based on a preferred land use and transportation investment scenario, referred to as Scenario 2: Preferred Scenario/Infill Emphasis, or the “Plan”, which defines a pattern of future growth and transportation system investment for the region. The Plan includes comprehensive improvements to the regional and local transportation networks, with a focus on infill development in downtowns and town centers in close proximity to jobs and services. In addition, the Plan emphasizes transportation investments in active transportation facilities to improve bicycle and pedestrian mobility. The 2018 RTP/SCS scenario development and evaluation processes are described in Chapters 7 and 8, respectively.
Regulatory Setting & Planning Requirements

This 2018 RTP/SCS sets the foundation for transportation investment priorities for the next 25 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)** 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 requirements 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;
10. Reduce or mitigate stormwater impacts of surface transportation; and
11. Enhance travel and tourism.

**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 $15 million per year and $450 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 (CAA), 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.


California Transportation Plan (CTP) 2040. The CTP provides a long-range policy framework to meet California’s future mobility needs and reduce GHG emissions, and defines goals, performance-based policies, and strategies to improve mobility and enhance quality of life.
RTP/SCS Goals and Objectives

Seven “Vision Themes” provide the foundation for the plan:

- 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.
- Identify funding to operate and maintain the existing and future transportation system.

Goals and Objectives

The following goals and objectives have been defined for the 2018 RTP/SCS.

1. **Highways, Streets, and Roads**: Provide a safe and efficient regional road system that accommodates the demand for movement of people and goods.
   - Maintain a Level of Service D on all regionally significant roads.
   - Identify and prioritize improvements to the regional road system.
   - Use the existing street and road system in the most efficient possible manner to improve local circulation.
   - Monitor the impact of development on the regional road system.

2. **Transit**: Provide an efficient, effective, coordinated regional transit system that increases mobility for urban and rural populations, including transportation for disadvantaged persons.
   - Meet all transit needs that are “reasonable to meet”.
   - Increase transit ridership at a rate that exceeds annual population growth rate.
   - Promote citizen participation and education in transit planning.
   - Promote transit ridership to and from Mariposa County and Yosemite National Park.

3. **Passenger Rail**: Provide a rail system that offers safe and reliable service for passengers.
   - Maintain adequate passenger service on Amtrak San Joaquin route.
   - Establish a High-Speed Rail system connecting Merced and Los Banos to Sacramento and the Bay Area.

4. **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.
   - Provide an adequate regional road system for goods movement.

5. **Aviation**: Provide a fully functional and integrated air service and airport system that complements the countywide transportation system.
   - Maintain daily commercial airline service to a major metropolitan airport.
   - Work with local agencies to ensure compatible land uses around existing airports to reduce noise conflicts
   - Maintain alternative modes of transportation to and from local airports.

6. **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.
   - Develop and construct bike and walkway facilities in urban areas and other communities where non-motorized systems do not currently exist.
   - Prepare and/or update a regional active transportation/non-motorized plan every five years.
   - Develop and construct walkway facilities in urban areas and other communities where pedestrian systems do not currently exist.
7. **Energy**: Reduce usage of nonrenewable energy resources for transportation purposes.
   7.1. Increase public transit and carpooling/vanpooling and bicycling/walking to exceed population growth.

8. **Air Quality**: Achieve air quality standards set by the Environmental Protection Agency (EPA), and the State Air Resources Board.
   8.1. Coordinate transportation planning with air quality planning at the technical and policy level.

9. **Land Use Development Patterns and Strategies**: Provide economical, long-term solutions to transportation problems by encouraging community designs that encourage walking, transit, and bicycling.
   9.1. Innovative land use and transportation planning.
   9.2. Plan future roads to accommodate land uses at a regional level.
   9.3. Roads that are pedestrian friendly, encourage bicycle trips and the use of mass transportation.
   9.4. Preserve productive farmland and land that provides habitat for rare, endangered or threatened species.
   9.5. Goals and Policies consistent at both the regional and local levels.

10. **Transportation Financing**: Develop and support financing strategies that provide for the continuous implementation of the Regional Transportation Plan projects and strategies.
    10.1. Develop and adopt policies that will provide adequate funding resources for all transportation modes and strategies.

11. **Outreach and Coordination**: Provide a forum for participation and cooperation in transportation planning and facilitate relationships for transportation issues that transcend jurisdictional boundaries.
    11.1. Assist jurisdictions in local transportation planning.
    11.2. Promote consistency among all levels of Transportation Planning.

12. **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.
    12.1. Prioritize infill and growth in existing communities.
    12.2. Prioritize funding for complete street projects on existing corridors.
    12.3. Explore funding sources to incentivize jurisdictions.
    12.4. Conduct a needs assessment and link it to the countywide health assessment.
    12.5. Re-evaluate project selection criteria.
    12.6. Prioritize vanpools and ridesharing.
    12.7. Emphasize and explain “co-benefits” of implementing SB 375 in addition to meeting GHG reduction targets.
    12.8. Enhance the existing public participation process.
    12.9. Enhance existing transit services.

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. To be developed.

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

15. **Safety for all Roadway Users**: Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
    15.1. Assist member jurisdictions in local safety planning.
    15.2. Improve safety performance monitoring systems.
    15.3. Coordinate with regional agencies.

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. **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.
   17.1. Coordinate with local agencies.
   17.2. Coordinate with regional agencies.

18. **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.
   18.1. Continue to pursue all forms of federal and state grant funding for implementing multimodal and safety improvements.
   18.2. Administer and expeditiously implement the Measure V Expenditure Plan.

**Performance Framework**

The 2018 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 8** presents the performance measure results for the Plan compared to BAU. **Appendix L** contains a table of the same results.

**Mobility & Accessibility**
- New development trip generation (vehicle trips)
- New development vehicle miles traveled (VMT)
- Percentage of new households within walking distance (0.5 miles) of a transit stop
- Percentage of new EJ households (income/race combined) within walking distance (0.5 miles) of a transit stop
- Percentage of new EJ households (income-based only) within walking distance (0.5 miles) of a transit stop
- Percentage of new EJ households (race-based only) within walking distance (0.5 miles) of a transit stop
- Vehicle Miles Traveled (VMT) growth (2015-2035)
- 2035 Vehicle Miles of Travel (Total VMT)
- Average trip length – vehicle trips
- 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
- Percentage of new households within walking distance (0.5 miles) of a park
- Percentage of new low-income EJ households within walking distance (0.5 miles) of a park
- EJ households as a percentage of total households within 500 feet of a major roadway
- Meets federal health based emission budgets

Environmental Quality
- CO2 emissions per household of new development (tons/year)
- GHG reduction target compliance (2035 meets 10 percent reduction of 2005 baseline conditions)

Reliability & Congestion
- Congested Vehicle Miles of Travel
- Vehicle Hours of Delay
Forecasts

The 2018 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 as part of a larger demographic forecast prepared for the three-county region encompassing Merced, Stanislaus, and San Joaquin counties. The forecasts were developed specifically for the preparation on the 2018 RTP/SCS in each respective county (per the Federal FAST-Act MPO Planning Regulations and Senate Bill 375). The Merced County Forecast Summary was prepared by the University of the Pacific (UOP) Center for Business and Policy Research and completed in 2016. Demographic forecasts are presented in Chapter 5.

Transportation Demand

The travel demand model includes the three San Joaquin Valley MPO regions of MCAG, San Joaquin Council of Governments (SJCOG), and Stanislaus Council of Governments (StanCOG). The travel demand model is maintained by SJCOG. The tri-county travel demand model allows for generation of the region’s future travel behavior, modal choices, transportation and transit network performance, and interregional travel demand.

The three-county model is based on information from the 2010 Census, the most recent American Community Survey (2016), and 2012-2013 California Household Travel Survey data. It includes an updated 2015 baseline and includes enhancements to the model structure developed as part of the MIP model from its predecessor version updated as part of the 2016 RTP/SCS. Future transportation demand is presented in Chapter 5.

The travel demand model validation report is provided in Appendix M.

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 a financially constrained RTP whereby total Capital Improvement Program (CIP) project costs were accounted for through available and expected funding over the life of the program (25 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 2018 RTP/SCS financial revenue forecast identifies several new 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.

About 40,000 acres of wetlands in the center of the Merced County support one of the most concentrated water fowl 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 25 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.
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 multi-modal 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 2018 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

Legend

Functional Classification
- Interstate
- Freeway/Expressway
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector

2018 Regional Transportation Plan/Sustainable Communities Strategy
Goods Movements

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 the pie charts, most of the freight transport for Merced County involves agricultural and forestry goods being moved by trucks (Source MCAG 2014 RTP/SCS).

In 2008, Merced County’s farm commodities generated $2.6 billion. Using conversion factors from the University of California Davis research study, this $2.6 billion agricultural production creates 47,000 jobs (29,000 in the farm sector and 18,000 in other industries).

Freight is transported from, to and within the San Joaquin Valley predominantly by the following modes: trucks, rail, and air.

Trucks

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 reduced Levels of
Service. 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 amount 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, market places, 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.

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 movement of goods for the new University of California Campus is also an issue. The UC Campus itself opened in the year 2005. The movement of goods and supplies will increase incrementally as the population of the campus increases. 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 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 provides Amtrak passenger service in and through Merced County.

**Union Pacific Transportation Company**

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.

**Burlington Northern 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 Burlington Northern tracks. BNSF has a rail spur on the Castle Airport business park through which businesses on Castle are receiving deliveries.

**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. The largest of these rail freight service users are located in the Cities of Merced, Atwater, and Los Banos.

**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 per) so that increased rail-haul frequencies don’t lead to worse congestion in 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.
The City of Merced has the most extensive bike path system in the county. 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.

**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 Bicycle Plan in 2008. Both the Bicycle Plan and Gustine’s General Plan identify the need to provide a safe system of bikeways as an alternative to motor vehicle travel, and establish and maintain routes that are designed to ensure safety while being aesthetically pleasing. The City of Gustine has a bike lane project currently in design for Highway 33/140.

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 multi-modal 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.

Future
In recent years, non-motorized travel has become more popular due to several factors: energy savings, health advantages, and environmental improvement. It should continue to increase in popularity due to public awareness of health and environmental benefits.

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 has developed in response to the basic transportation needs of Merced’s transit-dependent population and has maintained that standard of service.

Existing System
In 1996, Merced County Transit – “The Bus” – began providing a consolidated public transit service throughout Merced. 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 Bus”

The Transit Joint Powers Authority for Merced County operates urban and rural bus transit services, known as The Bus. The Bus operates on 16 fixed-route lines and provides paratransit service throughout the county. Paratransit is a reservation-based, complimentary curb-to-curb transit service for ADA qualified persons with disabilities who are unable to use the fixed-route system. The Bus currently operates 42 buses with a current peak requirement for 35 vehicles. Generally, The Bus fixed route services operate from 6:00 a.m. to 8:00 p.m. Monday through Friday, and from 8:00 a.m. to 6:00 p.m. on weekends.

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 in 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 Public Transit – Human Services Coordinated Plan was adopted by MCAG in July 2009 in response to requirements established by Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This document outlines existing public and private social service transportation systems within Merced County and offers strategies for improvement of transportation service through increased coordination and consolidation.
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 Senior Transportation Program provides transportation funding subsidy to disabled and older adults, 60-62 years of age or older. A limited number of free bus passes are available to seniors age 60-62; 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. Monthly bus passes are available for purchase at a discounted price. A limited number of free Paratransit bus passes are also available for seniors, age 60 and older, with proof of age and an ADA Paratransit Eligibility Card.

**Passenger Rail**

The San Joaquin Corridor (Bakersfield to Oakland and Sacramento) is a major transportation asset between Southern and Northern California. It serves a vital function in providing intercity service within and between cities in California's Central Valley.

The 363-miles of the San Joaquin Corridor carry intercity passenger rail and freight service, with connections to commuter rail services in Stockton. The current operating schedule includes seven daily round trip trains: five between Oakland and Bakersfield and two between Sacramento and Bakersfield. All trains run between Stockton and Bakersfield. To provide the existing frequency of service between all points on the route, connecting buses are provided between Stockton and Sacramento for trains serving Oakland - Bakersfield; and for trains serving Sacramento - Bakersfield, connecting buses are provided between Stockton, Oakland and San Francisco.

The average run time between Oakland and Bakersfield is 6 hours and 13 minutes with an overall average speed, including station dwell time, of 50 miles per hour. Between Sacramento and Bakersfield, the average run time is approximately 5 hours and 19 minutes with an overall average speed of 53 miles per hour. The maximum track speed on the San Joaquin Corridor is 79 miles per hour.

Amtrak operates the San Joaquin line under provisions of its contracts with the BNSF and UPRR. Predominant right-of-way ownership is by the BNSF, which owns the 276 miles of track from Port Chicago to Bakersfield. The UPRR owns 39 miles at the north end of the route between Oakland and Port Chicago, and 49 miles in the segment between Stockton and Sacramento.

**High-Speed Rail**

The California High-Speed Rail system will cover over 800 miles of rail, with up to 24 stations. The project would construct high-speed rail services connecting the cities of San Francisco, San Jose, Merced, Sacramento, Fresno, Bakersfield, Palmdale, Burbank, Los Angeles, Anaheim, and San Diego. The City of Merced is planned to be a significant juncture point for trains connecting to the Bay Area and the Sacramento region, as shown in the graphic to the right. Discussions regarding high-speed rail are ongoing for a station in the City of Merced. Figure 3.2 presents the California High-Speed Rail proposed alignment.

**ACE**

With the passage of SB-132, the Altamont Commuter Express (ACE) rail service will extend to Modesto, Ceres and Merced. This will for the first time provide commuter-oriented passenger rail service connecting Merced and Stanislaus County to the Bay Area (new track, rail capital, and rail infrastructure improvements are identified and funded through SB 132). Transit station improvements are being pursued by the cities of Modesto, Ceres, and Turlock to new accommodate ACE passenger rail service.
Figure 3.2 – California High-Speed Rail Authority Proposed Statewide Alignment
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 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 (Regional-Business/Corporate)

Merced Regional Airport 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 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/Primary Non-Hub Airport.

Gustine Airport (Community-Agriculture)

The Gustine Airport is classified as a basic utility 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 (Community-Agriculture)

The Los Banos Municipal Airport is a basic utility 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 (Community)

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 bombers and air refueling aircraft crew training. 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 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. FHWA focused on three measures: Safety, Pavement and Bridge Condition, and NHS, Freight and CMAQ, for initiating the objectives-driven, performance-based approach to planning for operations. 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 under baseline conditions. Additional information on the NPMR performance measures and implementation schedules is presented in Appendix Y.

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 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 quality in 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 to maximize the impacts of expenditures on the system. MCAG is currently developing a PMP.

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 Poor or At-Risk 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 transportation in a state of good repair is a federal initiative and part of the NPMR (National Performance Management Rule). The passage of Measure V will help cities and the county to meet maintenance needs and to rehabilitate transportation systems.

Table 4.1 – Existing (2016) Pavement Conditions

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Pavement Condition Index (PCI)</th>
<th>Condition</th>
<th>Maintained Centerline Miles</th>
<th>Daily Vehicle Miles Traveled (DVMT) (1,000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atwater</td>
<td>61</td>
<td>At Lower Risk</td>
<td>103</td>
<td>210</td>
</tr>
<tr>
<td>Dos Palos</td>
<td>49</td>
<td>Poor</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Gustine</td>
<td>61</td>
<td>At Lower Risk</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Livingston</td>
<td>71</td>
<td>Good</td>
<td>47</td>
<td>65</td>
</tr>
<tr>
<td>Los Banos</td>
<td>61</td>
<td>At Lower Risk</td>
<td>130</td>
<td>181</td>
</tr>
<tr>
<td>Merced</td>
<td>49</td>
<td>Poor</td>
<td>274</td>
<td>612</td>
</tr>
<tr>
<td>Merced County (Unincorporated)*</td>
<td>50</td>
<td>At Higher Risk</td>
<td>2234</td>
<td>1619</td>
</tr>
</tbody>
</table>

PCI based on low range value; *PCI based on high range value
Sources: California Statewide Local Streets and Roads Needs Assessment, 2016; Caltrans Highway Performance Monitoring System (HPMS), 2016.
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 may not be high enough to justify the service. According to the Triennial Review of the Transit Joint Powers Authority (TJPA) of Merced County (2017), transit service in Merced County is evaluated on certain requirements based on three metrics:

- **Not Deficient:** An area is considered not deficient if, during the review, no findings were noted with the grantees’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 1,802 injuries or fatalities in 2015, ranking 26th out of 58 counties in California for the highest number of injuries and/or deaths per capita. Of these injuries or deaths, 286 (or 16 percent) resulted from an alcohol related collision, the 5th highest per capita out of California counties. A total of 58 (or 3 percent) involved a bicyclist, and 94 (or 5 percent) involved a pedestrian.

In 2015, Merced County had over 1,800 collisions resulting in injuries or fatalities.

Per the NPMR Caltrans has established metrics and targets for safety on the National Highway system within Merced County. The Merced County safety targets for 2018 are presented in Table 4.2.

**Table 4.2 – Merced County Safety Targets for 2018**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Fatalities</td>
<td>FARS</td>
<td>49.6</td>
<td>-7.69%</td>
<td>45.8</td>
</tr>
<tr>
<td>Rate of Fatalities (per 100 million VMT)</td>
<td>FARS &amp; HPMS</td>
<td>1.8</td>
<td>-7.69%</td>
<td>1.7</td>
</tr>
<tr>
<td>Number of Serious Injuries</td>
<td>SWITRS</td>
<td>133.6</td>
<td>-1.50%</td>
<td>131.6</td>
</tr>
<tr>
<td>Number of Serious Injuries (per 100 million VMT)</td>
<td>SWITRS &amp; HPMS</td>
<td>4.9</td>
<td>-1.50%</td>
<td>4.8</td>
</tr>
<tr>
<td>Number of Non-Motorized Fatalities and Non-Motorized Severe Injuries</td>
<td>FARS &amp; SWITRS</td>
<td>26.2</td>
<td>-10%</td>
<td>23.6</td>
</tr>
</tbody>
</table>
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 address congestion 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.

Preliminary analysis for passenger vehicles and heavy-duty trucks on the National Highway System in Merced County is provide in Appendix T.

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 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 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. 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 and duration 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 to be 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.
5. Future Conditions

The ways in which the Merced County region grows over the next 25 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 2018 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 decisions are based on the region’s growth forecasts. The developed growth forecasts were prepared as part of a larger demographic forecast prepared for the three-county region encompassing Merced, Stanislaus and San Joaquin Counties. The forecasts were developed specifically for the preparation of the 2018 Regional Transportation Plan and Sustainable Communities Strategy in each respective county (per the Federal FAST- ACT MPO Planning Regulations and Senate Bill 375). The forecasts were 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. The complete countywide population, household, and employment forecasts are present in Table 5.1.

Table 5.1 – Merced County Regional Growth Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Households</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018*</td>
<td>282,016</td>
<td>84,033</td>
<td>82,810</td>
</tr>
<tr>
<td>2020</td>
<td>87,322</td>
<td>87,322</td>
<td>82,018</td>
</tr>
<tr>
<td>2025</td>
<td>310,572</td>
<td>93,441</td>
<td>86,058</td>
</tr>
<tr>
<td>2030</td>
<td>357,496</td>
<td>100,906</td>
<td>92,100</td>
</tr>
<tr>
<td>2035</td>
<td>388,939</td>
<td>117,838</td>
<td>105,700</td>
</tr>
<tr>
<td>2040</td>
<td>106,923</td>
<td>33,805</td>
<td>22,890</td>
</tr>
<tr>
<td>2018 to 2042</td>
<td>106,923</td>
<td>33,805</td>
<td>22,890</td>
</tr>
</tbody>
</table>

Growth %

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Households</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018*</td>
<td>38%</td>
<td>40%</td>
<td>28%</td>
</tr>
</tbody>
</table>

*Years 2018 and 2042 Interpolated
Population
From 2010 to 2015, Merced County’s population grew by approximately 16,000 (or 6 percent) to 273,000. This growth outpaces the growth of San Joaquin County, Stanislaus County, and the state of California, which grew by 3 percent, 5 percent and 3 percent from 2010 to 2015, respectively. Table 5.2 shows the population distribution within Merced County for year 2015 relative to year 2010, as well as future forecasts for years 2042 and 2060.

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. Atwater is located along SR 99, and accounts for 11 percent of the County’s population.

Between year 2018 and year 2042, the population of Merced County is expected to increase by approximately 107,000 persons to 388,939.

As shown in Table 5.2, by 2042, the City of Merced will increase in population by 42 percent, Los Banos by 49 percent, and Atwater by 42 percent. The majority of Merced County’s population is Hispanic, accounting for approximately 52-percent of the total population.

Table 5.2 – Merced County Population Growth Trends

<table>
<thead>
<tr>
<th>City</th>
<th>Current Trend</th>
<th>Future Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atwater</td>
<td>27,587</td>
<td>30,028</td>
</tr>
<tr>
<td>Dos Palos</td>
<td>4,904</td>
<td>5,259</td>
</tr>
<tr>
<td>Gustine</td>
<td>5,438</td>
<td>5,872</td>
</tr>
<tr>
<td>Livingston</td>
<td>12,733</td>
<td>13,948</td>
</tr>
<tr>
<td>Los Banos</td>
<td>34,548</td>
<td>38,681</td>
</tr>
<tr>
<td>Merced</td>
<td>77,080</td>
<td>84,125</td>
</tr>
<tr>
<td>Unincorporated</td>
<td>94,510</td>
<td>94,805</td>
</tr>
<tr>
<td><strong>Merced County Total</strong></td>
<td><strong>256,800</strong></td>
<td><strong>272,718</strong></td>
</tr>
<tr>
<td>San Joaquin County</td>
<td>685,306</td>
<td>708,554</td>
</tr>
<tr>
<td>Stanislaus County***</td>
<td>514,453</td>
<td>540,794</td>
</tr>
<tr>
<td>California</td>
<td>37,253,956</td>
<td>38,421,464</td>
</tr>
</tbody>
</table>

*US Census Bureau, ACS 5-Year Estimate
**Merced County Forecast Summary, University of the Pacific, 2016.
***San Joaquin Valley Forecasts, University of the Pacific, 2016.
****Year 2042 estimates were interpolated.

Housing
The number of households in Merced County reached 84,033 units in 2018, and is expected to increase to approximately 117,838 by 2042 (42 percent growth). The majority of the current housing stock is located in the City of Merced (33 percent). Most of the growth is expected to occur within Merced County cities, all of which are expected to increase their housing stock 50 percent by 2042 (except for Dos Palos, which will increase by nearly 40 percent). 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.
Between year 2018 and year 2042, the housing stock of Merced County is expected to increase by approximately 34,000 households to 117,838.

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>
<thead>
<tr>
<th>County</th>
<th>Median Home Sales Price</th>
<th>Percent Difference from Merced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merced</td>
<td>$210,100</td>
<td>-</td>
</tr>
<tr>
<td>Fresno</td>
<td>$220,100</td>
<td>5%</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>$243,500</td>
<td>16%</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>$278,400</td>
<td>33%</td>
</tr>
<tr>
<td>Sacramento</td>
<td>$301,200</td>
<td>43%</td>
</tr>
<tr>
<td>Contra Costa</td>
<td>$522,500</td>
<td>149%</td>
</tr>
<tr>
<td>Alameda</td>
<td>$656,700</td>
<td>213%</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>$836,800</td>
<td>298%</td>
</tr>
<tr>
<td>San Mateo</td>
<td>$917,600</td>
<td>337%</td>
</tr>
<tr>
<td>San Francisco</td>
<td>$941,400</td>
<td>348%</td>
</tr>
<tr>
<td>California</td>
<td>$477,500</td>
<td>127%</td>
</tr>
</tbody>
</table>

Source: US Census Bureau, ACS 5-Year Estimate.

Employment

In 2015, there were approximately 73,000 employed residents within Merced County. According to 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 in the 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 of University of California (UC) Merced, located just northeast of the City of Merced.

Between year 2018 and year 2042, employment within Merced County is expected to increase by approximately 23,000 jobs to 105,700.

Jobs-Housing-Balance

The ongoing trend of commuters migrating to the Valley for housing while continuing to work in other markets has 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 of 1.

As of 2018, Merced County had approximately 82,810 jobs and 84,033 households, resulting in a jobs-housing ratio of 0.99 jobs per household. By 2042, Merced County is forecasted to have approximately 110,166 jobs and 117,838 households, resulting in a decrease in the jobs-housing ratio to 0.93.
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 continue to increase. Under the Plan, total daily vehicle miles traveled (VMT, or the distance that individuals travel in their vehicles) will increase to 9,691,721 miles. This is less than the anticipated VMT without implementation of the 2018 RTP/SCS plan. As such, implementation of this plan will result in a decrease in VMT throughout the region. Performance measure results relating to travel growth within the Merced region is presented in Chapter 8.

Under future (2042) 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 Fe Drive between the Stanislaus County Line and SR 59 is projected to exceed its capacity by 2042. Appendix T provides additional detail regarding existing and future roadway operations in Merced County. Figure 5.1 presents the VMT forecast growth between existing and future conditions (2042) under the Plan.

**Figure 5.1 – Future (2042) Vehicle Miles Traveled (VMT) Forecast**

![Graph showing VMT forecast growth](image)

**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 BAU.
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 to 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 parking systems and payment
- Optimizing traffic flow on congested freeways and arterial streets

Transportation-as-a-Service

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 public system 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.

Autonomous Vehicles

Over the last few years there has been considerable investment being made 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.
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) will 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, and 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 2018 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 2018 MCAG RTP/SCS financial revenue forecasts approximately $3.965 billion in available funding through fiscal year 2042.

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 2018 MCAG RTP/SCS financial revenue forecasts include three new funding sources: Measure V, SB 1, and SB 132.

Figure 6.1 – Revenue Forecasts by Funding Source
**Recent Changes**

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. The FAST Act replaced MAP-21 as the operative federal funding bill for transportation improvements.

In 2016, Measure V was passed in Merced County to provide additional funds to address a variety of mobility needs. Measure V provides a local source of funding by instituting a ½-cent transportation sales tax, estimated to generate $450 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 to address deferred maintenance on the state highway system and the local street and road system.

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 Corridor Express to Modesto, Ceres and Merced, a commuter rail line between the Bay Area and Central Valley, and $100 million for a parkway project at the UC Merced campus.

The 2018 MCAG RTP/SCS financial revenue forecasts approximately $3.965 billion in available funding through fiscal year 2042.

**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 Transportation Commission (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. 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.

**Measure V**

Measure V was passed by voters in November 2016 to implement a 30-year, ½ cent transportation sales tax in 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 estimates that the measure will generate approximately $15 million per year based on the ½-cent sales tax for an estimated total of $450 million over the course of the measure’s lifetime.
SB 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.

SB 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, and $100 million for a parkway project at the UC Merced campus.

Active Transportation Program (ATP)
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 competitive grant funding program. For the ATP Cycle 3 (2017), the total amount available in the program is about $240 million. For the ATP Cycle 4, the total amount available in the program is about $440 million through year 2023.

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 are allocated 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, and are presented in Appendix I:

**Local Funds**
- State Gas Tax
- Transit Fares
- Local Transportation Fund (LTF)

**State Funds**
- 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 2018 MCAG RTP/SCS financial revenue forecasts approximately $3.965 billion in available funding through fiscal year 2042. Forecast estimates are specified for local, state, and federal funding sources, as shown in Table 6.1.

### Table 6.1 – 2018 RTP/SCS Revenue Forecasts

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td><strong>Federal:</strong></td>
<td>$418,078,933</td>
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<tr>
<td>Congestion Mitigation and Air Quality (CMAQ)</td>
<td>$95,571,363</td>
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<tr>
<td>Surface Transportation Block Grant Program (STBGP)</td>
<td>$4,849,082</td>
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<tr>
<td>Highway Safety Improvement Program (HSIP)</td>
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<td>Highway Bridge Program (HBP)</td>
<td>$125,856,384</td>
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<td>Federal Lands</td>
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<td>Federal Transit Formula</td>
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<td><strong>State:</strong></td>
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<tr>
<td>State Highway Operations and Protection Program (SHOPP)</td>
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<td>State Transportation Improvement Program (STIP)</td>
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<td>State Transit Assistance (STA)</td>
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<td>Highway Maintenance (HM)</td>
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<tr>
<td>State and/or Federal Aviation Funds</td>
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<td>Low-Carbon Transit Operations Program</td>
<td>$7,039,267</td>
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<td>SB 132: Campus Parkway and ACE Extension to Merced</td>
<td>$200,000,000</td>
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<td>SSARP</td>
<td>$8,280,446</td>
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<td>ATP (Competitive)</td>
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<tr>
<td>SB1: TCEP, TIRCP, and other programs</td>
<td>$470,873,249</td>
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<tr>
<td><strong>Local:</strong></td>
<td>$1,026,401,407</td>
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<tr>
<td>Measure V</td>
<td>$375,000,000</td>
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<tr>
<td>Local funding (Gas Tax, Prop 42, Development Impact Fees, General Fund, Interest)</td>
<td>$453,627,440</td>
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<tr>
<td>Transit Fares</td>
<td>$44,845,569</td>
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<tr>
<td>Local Transportation Funds (LTF)</td>
<td>$152,928,398</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$3,965,735,637</td>
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</table>
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 2018 RTP/SCS, scenario planning was used to study four different scenarios. Each scenario represents a different set of land use 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 the region 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 2018 RTP/SCS relies on a regional forecast of future demographics that was prepared as part of a larger demographic forecast prepared 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, the forecasts were developed by the University of Pacific (UOP) in 2016 (Appendix J). 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. As such, the forecasts were reviewed by each of MCAG’s member agencies.

Using the demographic projections, four 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). 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 include decisions for spending levels on new roadway capacity, roadway maintenance, transit, and alternative modes of travel (e.g., bike, pedestrian).
Scenario Development

Scenario 1: Compact Development/Business as Usual

Scenario 1: Compact Development/Business as Usual (or “BAU”) reflects a more compact footprint than the types of growth patterns historically seen in Merced County. This scenario involves more infill development in downtown cores than seen historically (but less than the other three scenarios), and less development in new growth areas than seen historically (but more than in the other scenarios). Overall, 77 percent of countywide housing growth is in cities and 23 percent in existing unincorporated communities, while 69 percent of countywide employment growth is in cites and 31 percent is in existing unincorporated communities.

Under Scenario 1, the average residential density for new development is 7.3 units per acre. The housing types for future growth are limited to some extent, with an emphasis on large-lot single-family homes and smaller-lot single-family homes over multi-family housing.

Transportation investments in Scenario 1 prioritize roadway spending, reflecting a historical pattern of auto-oriented development. This scenario does put a strong emphasis on spending for roadway maintenance vs. new capacity, however. Nevertheless, most of the transportation investment in Scenario 1 is dedicated to roadways with increased, but still limited, funding for alternative transportation improvements such as transit and bicycle/pedestrian improvements.
Scenario 2. Preferred Scenario/Infill Emphasis

Scenario 2: Preferred Scenario/Infill Emphasis 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 emphasis on infill results in a higher average housing density of 10.3 units per acre. The higher housing density comes from a greater reliance on multi-family housing in Scenario 2, 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 Scenario 1. At the same time, it reduces the amount of relative spending on new roadway capacity.
**Scenario 3. Jobs-Housing Balance**

Scenario 3; Jobs-Housing Balance locates more housing in currently job-rich areas (Merced and Livingston) and less housing in cities with a lower jobs/housing ratio. Additionally, it locates more jobs in cities with lower jobs/housing ratios (Atwater, Gustine, Los Banos, and Dos Palos). This scenario also reallocates both housing and job growth in unincorporated communities, and creates no new unincorporated communities.

Scenario 3 improves the jobs/housing balance in all cities, and by doing so it places services, employment, and housing in close proximity. Scenario 3 emphasizes compact development within downtown cores near jobs and services, and its new residential neighborhoods are more compact than Scenarios 1 and 2. Consequently, the average housing density is somewhat higher at 10.6 units per acre, reflecting a greater reliance on multi-family housing than in Scenarios 1 and 2, and more small-lot single-family homes than large-lot single-family homes.

Scenario 3 involves a greater percentage of new multifamily, mixed-use housing, and duplex/townhomes within and near downtown cores than Scenarios 1 and 2. It also provides a mix of small-lot single-family and multifamily housing in new neighborhoods, with higher percentages of multifamily housing and more limited large-lot single-family development. The average residential density is higher at 16.6 dwelling units per acre. In addition, Scenario 3 locates more housing and jobs near transit. Similar to Scenario 2, transportation investments for Scenario 3 are more relatively focused on transit and bike/pedestrian improvements. The relative amount of transit investment increases in particular in this scenario compared to Scenario 1, and the relative amount of investment in new roadway capacity decreases.
Scenario 4: Transit Priority Corridors

Scenario 4 emphasizes infill development in downtown cores and priority transit nodes and corridors. This scenario limits development in new growth areas, with 89 percent of countywide housing growth in cities and 11 percent in existing unincorporated communities, and with 84 percent of countywide employment growth in cities and 16 percent in existing unincorporated communities. Scenario 4 also includes no new unincorporated communities. New residential neighborhoods are more compact than in Scenarios 1, 2, and 3.

Scenario 4 places population growth and new retail jobs along major corridors and high priority transit corridors in local jurisdictions. Consequently, services, employment, and housing are in close proximity and located near transit. This scenario has a greater reliance on new multifamily housing and townhomes, where the percentage of new multifamily/townhome units nearly equals the number of new small-lot single-family and large-lot single-family housing. This scenario achieves the highest residential densities among the four scenarios at an average of 10.9 units per acre.

Scenario 4 has a high investment in transit, particularly because new housing and employment is distributed along major corridors and high priority transit corridors. It also has significant investment in bicycle/pedestrian improvements.
Scenario Development Summary

While Scenario 1 most closely emulates existing land use plans prepared by local jurisdictions, Scenarios 2, 3, and 4 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, 3 and 4 reflect what growth could look like “if” the established development themes of each scenario were to occur.

Scenario 2 was adopted by the MCAG Boars as the Preferred Scenario, and is synonymous with the 2018 RTP/SCS, or “the Plan”. Scenario 1 is considered the Business as Usual scenario, or “BAU”. Chapter 8 presents the results of performance measures for the Plan and BAU.

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 2018 RTP/SCS. Using performance measures is not only good practice, but also critically important, because they help decision-makers and the public 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 to meet 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 four 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 Advisory Committee, and the MCAG Governing Board.

The results of these comparisons informed the decision to select Scenario 2: Infill Emphasis as the 2018 RTP/SCS Preferred Scenario (the Plan).

The results of these comparisons informed the decision to select Scenario 2: Infill Emphasis as the Preferred Scenario (or the “Plan”). This chapter summarizes the performance measure results for the Plan as compared against Scenario 1: Compact Development/Business as Usual (or “BAU”), which reflects “business as usual” conditions for the region.

Performance Measures
The relative impact of Plan was established by the performance measures associated with the goals presented Chapter 2 and Appendix L. Performance measures provide tangible results related to transportation, development, equity, environment, and health, among other issues, that provide a look into the 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 BAU:

- Less new vehicle trips and shorter trip lengths
- Higher proportion of trips made by bike, walking, or public transit
- More multi-family housing options at lower housing prices
- Higher density of housing options in downtown cores and located closer to transit services
- Less congestion on roadways
- Less CO2 emissions per household

The following infographics highlight the various performance measure results for BAU and the Plan.
### Mobility & Accessibility

**Improve the ability of people and goods to move between desired locations; and provide a variety of transportation choices.**

#### New project trip generation

<table>
<thead>
<tr>
<th>Trip Type</th>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential trips</td>
<td>247,490</td>
<td>229,583</td>
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<tr>
<td>Retail trips</td>
<td>258,979</td>
<td>219,463</td>
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<tr>
<td>Office trips</td>
<td>22,688</td>
<td>28,778</td>
</tr>
<tr>
<td>Other trips</td>
<td>68,531</td>
<td>62,816</td>
</tr>
</tbody>
</table>

*Does not reflect trip reductions that would result from transit ridership. Scenarios with a greater investment in transit would be expected to show more vehicle trip reductions once transit is factored in.*

#### New project Vehicle Miles Traveled (VMT)

<table>
<thead>
<tr>
<th>Trip Type</th>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential trips</td>
<td>702,445</td>
<td>651,657</td>
</tr>
<tr>
<td>Retail trips</td>
<td>655,278</td>
<td>555,905</td>
</tr>
<tr>
<td>Office trips</td>
<td>70,356</td>
<td>89,235</td>
</tr>
<tr>
<td>Other trips</td>
<td>255,366</td>
<td>234,070</td>
</tr>
</tbody>
</table>

#### Percent of new households within 0.5 miles of a transit stop

- **Compact Development:** 40.4%
- **Infill Emphasis:** 43.1%

(Does not reflect rail)

#### Percent of new EJ households (income/race combined) within 0.5 miles of a transit stop

- **Compact Development:** 32.4%
- **Infill Emphasis:** 34.2%

(Does not reflect rail)

#### Percent of new EJ households (income-based only) within 0.5 miles of a transit stop

- **Compact Development:** 21.0%
- **Infill Emphasis:** 22.6%

(Does not reflect rail)

#### Percent of new EJ households (minority-based only) within 0.5 miles of a transit stop

- **Compact Development:** 27.1%
- **Infill Emphasis:** 28.0%

(Does not reflect rail)
Mobility & Accessibility

Improve the ability of people and goods to move between desired locations, and provide a variety of transportation choices.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMT Growth by Scenario (2015-2035)</td>
<td>1,683,445</td>
<td>1,530,867</td>
</tr>
<tr>
<td>2035 Vehicle Miles of Travel (Existing plus net new growth)</td>
<td>9,618,401</td>
<td>9,691,721</td>
</tr>
<tr>
<td>Average Trip Length – Vehicle Trips</td>
<td>14.86</td>
<td>14.62</td>
</tr>
<tr>
<td>Distance in miles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Trip Length – Commuter Vehicle Trips</td>
<td>18.64</td>
<td>18.29</td>
</tr>
<tr>
<td>Distance in miles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Alone Daily Mode Share Percentage</td>
<td>36.4%</td>
<td>35.9%</td>
</tr>
<tr>
<td>Ped/Bike Daily Mode Share Percentage</td>
<td>9.3%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Meets Health-Based Emission Budgets?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>System Preservation</strong></td>
<td><strong>Sustainable Development Pattern</strong></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------</td>
<td></td>
</tr>
<tr>
<td>Maintain the transportation system is in a state of good repair and protect the region’s transportation investment by maximizing use of existing facilities</td>
<td>Provide a mix of land uses and compact development patterns and direct development towards existing infrastructure, which will preserve agricultural land, open space and natural resources</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>New highway and local road cost resulting from new development (dollars)</strong></th>
<th><strong>$975 Million</strong></th>
<th><strong>$785 Million</strong></th>
</tr>
</thead>
</table>

| **Acres of land consumed by new development per capita** | **0.15** | **0.11** |
| (measured in net new acres/net new population) | | |

| **Overall residential density of new development** | **7.3** | **10.3** |
| Housing units per net residential acre | | |

| **Total acres of land consumed by new development** | **8,498** | **6,372** |

<table>
<thead>
<tr>
<th><strong>New Housing growth</strong></th>
<th><strong>Cities</strong></th>
<th>77%</th>
<th>77%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing Unincorporated Communities</strong></td>
<td>23%</td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>New Employment growth</strong></th>
<th><strong>Cities</strong></th>
<th>69%</th>
<th>69%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing Unincorporated Communities</strong></td>
<td>31%</td>
<td>31%</td>
<td></td>
</tr>
</tbody>
</table>

| **Acres of farmland converted for new development** | **8,498** | **5,800** |
## Economic & Community Vitality

Promote job creation and business attraction, retention and expansion by improving the quality of life through new and revitalized communities.

<table>
<thead>
<tr>
<th>1: Compact Development</th>
<th>2: Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs-housing balance</td>
<td>0.8</td>
</tr>
</tbody>
</table>

## Social Equity

Promote and provide equitable opportunities to access transportation services for all populations and ensure all populations share in the benefits of transportation improvements and provide a range of transportation and housing choices.

### Housing mix by type for New Development

<table>
<thead>
<tr>
<th>Type</th>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multifamily/Townhome</td>
<td>19%</td>
<td>38%</td>
</tr>
<tr>
<td>Small lot single family</td>
<td>38%</td>
<td>38%</td>
</tr>
<tr>
<td>Large lot single family</td>
<td>43%</td>
<td>24%</td>
</tr>
</tbody>
</table>

### Housing unit distribution by household income of new development

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$35k</td>
<td>3%</td>
<td>11%</td>
</tr>
<tr>
<td>$35k - $50k</td>
<td>13%</td>
<td>23%</td>
</tr>
<tr>
<td>$50k - $75k</td>
<td>74%</td>
<td>65%</td>
</tr>
<tr>
<td>$75k+</td>
<td>10%</td>
<td>8%</td>
</tr>
</tbody>
</table>

## Health & Safety

Operate and maintain the transportation system to ensure public safety and security, and improve the health of residents by improving air quality and providing more transportation options.

<table>
<thead>
<tr>
<th>Percent of low-income households within 0.25 miles of a park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact Development</td>
</tr>
<tr>
<td>33%</td>
</tr>
</tbody>
</table>

## Environmental Quality

Consider the environmental impacts when making transportation investments, and minimize direct and indirect impacts on clean air and natural resources.

**CO₂ Emissions per household of new development**

Building energy use in tons of CO₂ per year.

<table>
<thead>
<tr>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2</td>
<td>7.1</td>
</tr>
</tbody>
</table>

This figure does not include transportation emissions.
### Environmental Justice (EJ)

Environmental Justice seeks to ensure that no one population or community is burdened or benefits from local policies, decisions and investments, and that all are given the opportunity to be involved in the transportation planning and decision-making process (Executive Order 12896, 1994).

#### Total Households

<table>
<thead>
<tr>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>106,358</td>
<td>106,365</td>
</tr>
</tbody>
</table>

#### Environmental Justice Households

- Environmental Justice Households are households within Census Block Groups with 60 percent or greater minority population or an average household income of less than 80 percent of the median (i.e. $49,100).

#### Total Households within 0.5 Miles of Transit

<table>
<thead>
<tr>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>42,060</td>
<td>45,115</td>
</tr>
</tbody>
</table>

- Non-environmental justice households as a percent of total households within 0.5 miles of transit: 22.1% for Compact Development and 24.1% for Infill Emphasis.
- Environmental justice households as a percent of total households within 0.5 miles of transit: 77.9% for Compact Development and 75.9% for Infill Emphasis.

#### Percent of EJ Households within 0.5 miles of transit, as a proportion of total EJ households

- Percent of EJ Households within 0.5 miles of transit: 41.9% for Compact Development and 50.6% for Infill Emphasis.

#### Environmental Justice Representation

- Environmental Justice Representation refers to how well EJ households have access to transit compared with non-EJ households. A positive percentage means that EJ households have better access than non-EJ households. A negative percentage means that EJ households have worse access, and a 0 means EJ and non-EJ households have equal accessibility to transit.

#### Total Households Within 0.5 Miles of Two or More Buses Per Hour

<table>
<thead>
<tr>
<th>Compact Development</th>
<th>Infill Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>28,086</td>
<td>32,046</td>
</tr>
</tbody>
</table>

- Non-environmental justice households as a percent of total households within 0.5 miles of two or more buses per hour: 21.3% for Compact Development and 23.6% for Infill Emphasis.
- Environmental justice households as a percent of total households within 0.5 miles of two or more buses per hour: 78.7% for Compact Development and 76.4% for Infill Emphasis.

#### Percent of EJ households within 0.5 miles of two or more buses per hour as a proportion of total EJ households

- Percent of EJ households within 0.5 miles of two or more buses per hour: 33.2% for Compact Development and 36.2% for Infill Emphasis.

#### Environmental Justice Representation

- Environmental Justice Representation refers to how well EJ households have access to transit compared with non-EJ households. A positive percentage means that EJ households have better access than non-EJ households. A negative percentage means that EJ households have worse access, and a 0 means EJ and non-EJ households have equal accessibility to transit.
9. Action Plan

The 2018 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 Appendix K) — for inclusion in the 2018 RTP/SCS.

Goals, Objectives, and Actions

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

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

   1.1. Maintain a Level of Service D on all regionally significant roads.
      1.1.1. Fund and implement the projects identified on the Tier 1 priority list in the Action Element of the RTP.
      1.1.2. Aggressively pursue discretionary Caltrans funding such as IIP, HBRR, HES.
      1.1.3. Implement a Regional Impact Fee for Transportation to pay for congestion relief projects.
   1.2. Identify and prioritize improvements to the regional road system.
      1.2.1. Prepare and apply evaluation criteria to prioritize regional road projects identified to improve the overall transportation system of the region.
      1.2.2. 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.
      1.2.3. Use Regional Improvement Program funds to finance the prioritized regional improvements.
   1.3. Use the existing street and road system in the most efficient possible manner to improve local circulation.
      1.3.1. Maintain street and road system for vehicle travel, transit services, bicycle travel, and pedestrians.
      1.3.2. Continue to exchange Federal STP for state dollars.
1.3.3. Aggressively pursue all available and potential fund sources to implement improvements to the present transportation system and maintain the transportation system.

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

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

1.4.2. Continue to develop and maintain and update a regional transportation model.

1.4.3. Analyze the cumulative impact of local development for the county and cities through the RTP Updates.

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

2.1. Meet all transit needs that are “reasonable to meet”.

2.1.1. Provide paratransit services for the elderly, handicapped, and those residents not served by a fixed route service.

2.1.2. Provide adequate fixed route transit system to serve the general public, including transit-disadvantaged persons.

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

2.2.1. Add additional routes and expand services as necessary to meet ridership demand to achieve established transit standards.

2.2.2. Provide improved transit service through the county wide Consolidated Transit System.

2.2.3. Plan for transit expansion to UC Merced.

2.2.4. Coordinate Countywide transit system with neighboring transit services and modes – Stanislaus, Madera, Amtrak, & YARTS.

2.3. Promote citizen participation and education in transit planning.

2.3.1. Involve the Social Services Transportation Advisory Council and the Citizens Advisory Committee in the regional transit planning process.

2.3.2. Use the MCAG newsletter for transit education.

2.4. Promote transit ridership to and from Mariposa County and Yosemite National Park.

2.4.1. Participate in the Joint Powers Authority for the Yosemite Area Regional Transportation System.

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

3.1. Maintain adequate passenger service on Amtrak San Joaquin route.

3.1.1. Monitor the activities of Amtrak to assure passenger rail services in Merced County.

3.2. Establish a High-Speed Rail system connecting Merced and Los Banos to Sacramento and the Bay Area.

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

4. **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.

4.1. Provide an adequate regional road system for goods movement.
4.1.1. Work with the Freight Advisory Committee to enhance and maintain a viable transportation system for freight and goods movement.

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

5.1. Maintain daily commercial airline service to a major metropolitan airport.
   5.1.1. Support commercial airline service in Merced County.

5.2. Work with local agencies to ensure compatible land uses around existing airports to reduce noise conflicts
   5.2.1. Support the Merced County Airport Land Use Commission and local airports in their efforts to ensure compatible land uses around airports.
   5.2.2. Support the local airports in their attempts to acquire the land surrounding the airports.
   5.2.3. Support noise abatement procedures.

5.3. Maintain alternative modes of transportation to and from local airports.
   5.3.1. Support regularly scheduled transit service from airports to the Transportation Center.

6. **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.

6.1. Develop and construct bike and walkway facilities in urban areas and other communities where non-motorized systems do not currently exist.
   6.1.1. Construct class I, II and III bike routes as designated in the local and regional plans.
   6.1.2. Actively pursue bicycle and pedestrian related funding sources to implement local and regional plans.

6.2. Prepare and/or update a regional active transportation/non-motorized plan every five years.
   6.2.1. Create an Advisory Committee or use existing groups for bike planning and project implementation recommendations.
   6.2.2. Implement the projects and programs in the plan.

6.3. Develop and construct walkway facilities in urban areas and other communities where pedestrian systems do not currently exist.
   6.3.1. Actively pursue pedestrian related funding sources to implement local and regional plans.

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

7.1. Increase public transit and carpooling/vanpooling and bicycling/walking to exceed population growth.
   7.1.1. Add additional transit routes and services where feasible.
   7.1.2. Support passage of ordinances that provide for vanpooling and carpooling programs.
   7.1.3. Support passage of ordinances that provide for park and ride lots.

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

8.1. Coordinate transportation planning with air quality planning at the technical and policy level.
8.1.1. Assist the San Joaquin Valley Air Pollution Control District to develop the transportation-related portions of the State Implementation Plan for air quality.
8.1.2. Evaluate and assist in the implementation of appropriate transportation control measures.
8.1.3. Support the expeditious implementation of transportation control measures identified in the State Implementation Plan for Merced region jurisdictions.
8.1.4. As required by federal regulation, give funding priority to transportation control measures.

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

9.1. Innovative land use and transportation planning.
9.1.1. Assist cities and County in assessing their existing road network system to find the problem areas and to identify necessary improvements that would improve traffic movement.
9.1.2. Evaluate land use strategies for member jurisdictions.

9.2. Plan future roads to accommodate land uses at a regional level.
9.2.1. Assist member jurisdictions in taking a regional approach in land use and developing a road network that serves the entire region.
9.2.2. Encourage all jurisdictions to actively participate in the Regional Transportation Plan Update process.

9.3. Roads that are pedestrian friendly, encourage bicycle trips and the use of mass transportation.
9.3.1. Assist member jurisdictions in developing and implementing strategies and design criteria that make new commercial and residential developments friendly to pedestrians and bicyclists.

9.4. Preserve productive farmland and land that provides habitat for rare, endangered or threatened species.
9.4.1. Consider impacts on prime farmland and areas that support protected wildlife.

9.5. Goals and Policies consistent at both the regional and local levels.
9.5.1. Assist cities and County during their General Plan updates to ensure that the Plans are consistent with the RTP.

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

10.1. Develop and adopt policies that will provide adequate funding resources for all transportation modes and strategies.
10.1.1. Implement and manage a regional transportation development fee program for priority road and transit improvement projects.
10.1.2. Provide technical assistance to local jurisdictions in the development of transportation financing mechanisms.
10.1.3. Consider cost efficiency in project evaluation criteria.

11. **Outreach and Coordination:** Provide a forum for participation and cooperation in transportation planning and facilitate relationships for transportation issues that transcend jurisdictional boundaries.
11.1. Assist jurisdictions in local transportation planning.

11.1.1. Evaluate transportation impacts of land use and development proposals.

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

11.1.3. Assist in the preparation of Circulation Elements for general plans and community plans.

11.2. Promote consistency among all levels of Transportation Planning.

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

12. 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.

12.1. Prioritize infill and growth in existing communities.

12.1.1. 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.

12.1.2. Support housing and employment growth to existing cities and unincorporated communities rather than directing growth to new town development and sprawl.

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

12.2.1.1. Prioritize investment in active travel, including investments in necessary infrastructure (sidewalks, streetlights, curb and gutter, bike lanes, and other pedestrian safety measures) to promote increased walking and biking.

12.2.1.2. Establish and implement a complete streets policy that requires its member jurisdictions to accommodate all transportation users through the incorporation of sidewalks, streetlights, curb and gutter and bicycle infrastructure in all projects, prioritizing existing streets and roads.

12.3. Explore funding sources to incentivize jurisdictions.

12.3.1.1. 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.

12.3.1.2. 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 is not 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, Cap and Trade funds, and others.

12.3.1.3. Encourage transit agencies to make use of all available federal, state, and local funding to sustain, 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.

12.4. Conduct a needs assessment and link it to the countywide health assessment.
12.4.1.1. 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.

12.5. Re-evaluate project selection criteria.

12.5.1.1. 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.

12.6. Prioritize vanpools and ridesharing.

12.6.1.1. 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 dedicating high-occupancy vehicle (HOV) lanes on highways and multi-lane roadways.

12.7. Emphasize and explain “co-benefits” of implementing SB 375 in addition to meeting GHG reduction targets.

12.7.1.1. Benefits include:

- Better health,
- less traffic,
- preserving farmland,
- less water use,
- less energy use,
- better air quality, and
- positive economic impact.

12.8. Enhance the existing public participation process.

12.8.1.1. Support a strong public participation process that meaningfully responds to and incorporates community priorities. Jurisdictions will make reasonable accommodations to ensure all materials are readily accessible and available in languages reflective of the community’s need.

12.8.1.2. 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.

12.9. Enhance existing transit services.
12.9.1.1. 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.

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. To be developed.

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

14.1. Improve congestion monitoring systems.

14.1.1. Coordinate with Caltrans District 10 on the implementation of the National Performance Management Rule

14.1.2. Biennially publish a Performance Monitoring Report that documents progress toward achieving the congestion and reliability performance targets established for Merced County

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

15.1. Assist member jurisdictions in local safety planning.

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

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

15.2. Improve safety performance monitoring systems.

15.2.1. Biennially publish a Performance Monitoring Report that documents progress toward achieving the safety performance targets established for Merced County

15.3. Coordinate with regional agencies.

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

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 program implementation

16.2. Improve pavement monitoring programs.

16.2.1. Track and biennially publish a Performance Monitoring Report that documents progress toward achieving the pavement condition performance targets established for Merced County

16.2.2. Coordinate with member agencies to design and implement a 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 the National Performance Management Rule.

17. **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.

17.1. Coordinate with local agencies.

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

17.1.2. Work with its’ member agencies to implement complete street projects that provide access to all users

17.2. Coordinate with regional agencies.

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

18. **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.

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

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

18.1.2. 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.

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

18.2.1. Annually administer and track program implementation.

**Improvement Plan**

The 2018 RTP/SCS includes transportation projects that addresses short-term and long-term mobility and safety needs. The Plan includes approximately $1.684 billion in specifically identified project costs (Tier I). Another $2.28 billion in spending is assumed through 2042 on projects that are in development and projects to be identified. Separately, a Tier II list which includes projects beyond 2042 are included in Appendix K. Given that the 2018 RTP/SCS financial revenue forecast is approximately $3.965 billion in available funding through fiscal year 2042, the project list can be considered financially constrained per federal requirements (i.e., Tier I).

**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), active transportation (bicycle and pedestrian), and aviation, as shown in Table 10.1 and Figure 10.1. Table 10.2 presents the full Tier I Project List. Project purpose and need by project types is discussed below.
Table 10.1 – Plan Expenditures by Project Type

<table>
<thead>
<tr>
<th>Project Category</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Maintenance &amp; Safety</td>
<td>$1,944,000,000</td>
<td>49%</td>
</tr>
<tr>
<td>Road Capacity</td>
<td>$1,020,000,000</td>
<td>26%</td>
</tr>
<tr>
<td>Transit (Bus &amp; Rail)</td>
<td>$624,000,000</td>
<td>16%</td>
</tr>
<tr>
<td>Active (Bike &amp; Ped)</td>
<td>$376,000,000</td>
<td>9%</td>
</tr>
<tr>
<td>Aviation</td>
<td>$878,000</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Total</td>
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Figure 10.1 – 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 $1.020 billion (or 26 percent) goes toward roadway capital improvement projects, including road widening, carpool and auxiliary lanes on highways, 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 $376 million (or 9 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 $624 million (or 16 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.

Rail projects included in the 2018 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, connecting to Sacramento and Fresno counties.

**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 $1.94 billion (or 49 percent) goes toward operations/maintenance projects, including routine maintenance, reconstruction, and safety improvements.

**Aviation Projects**

Aviation projects will be for maintenance and rehabilitation of existing airport pavements to improve safety and to maintain them in a state of good repair. A total of $878,000 goes toward aviation projects, including pavement rehabilitation, runway extension and widening, and layout improvements.

![Table 10.2 – 2018 RTP/SCS Tier I Project List](image)

<table>
<thead>
<tr>
<th>Agency</th>
<th>Title</th>
<th>Limits/Description</th>
<th>Type</th>
<th>Year</th>
<th>Total Cost ($1,000's)</th>
<th>Funding Sources</th>
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<tbody>
<tr>
<td>Atwater</td>
<td>Bellevue Rd and Broadway Ave reconstruction</td>
<td>Reconstruction, Complete Streets, Pedestrian crossings, complements previous projects</td>
<td>Road Maintenance</td>
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<td>Atwater Transit Center</td>
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<td>SR-99; Applegate Rd; Sycamore Ave; Atwater Blvd</td>
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<td>CMAQ, ATP</td>
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<td>Traffic Signals Synchronization &amp; Raised Median</td>
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<td>PM 12.7 to 17.6</td>
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<td>Intersection Improvements</td>
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<td>SR-140 from I-5 to w/o SR-33 PM 0.3 to PM 4.20. Shoulder widening</td>
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<td>SR 33 Shoulder widening</td>
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<td>SR 99 Childs Ave NB aux lane</td>
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<td>I-5 / SR-33 turning radius</td>
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<td>Caltrans</td>
<td>Repair &amp; Upgrade ITS Elements in Merced County</td>
<td>Various locations</td>
<td>Road Ops/Safety</td>
<td>2018</td>
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<td>Caltrans</td>
<td>Repair &amp; Upgrade ITS Elements, CMSes, CCTVs, Traffic Signals</td>
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<td>Blue Tooth/WIFI Travel Time Information (TTI), (Bluetooth based TTI Systems), in Merced County</td>
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<td>Caltrans</td>
<td>SR 99 Complete System Detection (Off-ramps and Mainline), from SR 120 to Merced/Madera County Line</td>
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<td>Caltrans</td>
<td>Intersection Traffic Control in outlying areas, various locations in Merced County</td>
<td>Various locations</td>
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<td>Caltrans</td>
<td>Intersection Traffic Control, SR-140 /SR-59 Merced Metro Area</td>
<td>SR-152/59 Los Banos Urban Area</td>
<td>Road Ops/Safety</td>
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<td>Road Ops/Safety</td>
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<td>Caltrans</td>
<td>I-5 STAA Improvements on SR 152/33 and SR 5/SR 165 Interchange</td>
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<td>Signal Installation/RAB at the intersection of SR 140 and Arboleda Dr</td>
<td>Road Ops/Safety</td>
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<td>SR-59/Oakdale Rd PM 22.99. Lengthen the SB right turn acceleration lane</td>
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<td>Road Ops/Safety</td>
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<td>Caltrans</td>
<td>SR 59 Widening part 2</td>
<td>Widen from 2 to 4 lanes from Olive to Bellevue</td>
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<td>County</td>
<td>Campus Parkway segments 2 and 3</td>
<td>New 4-lane expressway from Childs Ave. to Yosemite Ave.</td>
<td>Road Capacity</td>
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<td>Henry Miller Road reconstruction</td>
<td>SR-33 to Turner Island Rd</td>
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<td>Indiana Road reconstruction</td>
<td>Hutchins Rd to Washington Rd</td>
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<td>Ingomar Grade Road reconstruction</td>
<td>Badger Flat Rd to Cottonwood Road</td>
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Caltrans Total: $817,382
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<td>Netherton Rd to I-5</td>
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<td>SR-140/Plainsburg Rd Roundabout Project</td>
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<td>Atwater-Merced Expressway (AME) 1B &amp; 2</td>
<td>New 4-lane expressway from Green Sands to Hwy. 59 / Bellevue</td>
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<td>Mission Avenue reconstruction</td>
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<td>Sandy Mush Road Reconstruction Part 1</td>
<td>SR-59 to Nickle Rd (Map; project says Turner Island Road)</td>
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<td>Childs Ave Sidewalk</td>
<td>Parsons Ave to Campus Pkwy</td>
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<td>Dos Palos</td>
<td>Street Rehabilitation Program</td>
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<td>Blossom St. vicinity: complete streets, rehabilitation, and ADA</td>
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<td>Marguerite St to Loraine St Complete Streets including sidewalks, bike lanes, new transit stop</td>
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<td>Elgin/Sr 33 to General Ave.: rehabilitation</td>
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<td>Carnation Road Improvements</td>
<td>East Ave to WWTP Gate reconstruction</td>
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<td>SR-33/140 and 4th Street; realignment of Railroad Ave</td>
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<td>Funding Sources</td>
</tr>
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<td>Eastside Storm Drainage Improvements</td>
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<tr>
<td>Gustine</td>
<td>Airport Fencing Improvements</td>
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<td>Schmidt Park Multiuse Path Phase 2</td>
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<td>New Bike/Pedestrian Path (no R/W) Alongside SR-33/140</td>
<td>Active (Bike/Ped)</td>
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<td>5th Street</td>
<td>Complete Streets Project (sidewalk, ADA curb-cuts, drainage)</td>
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<td>Complete Streets Project (sidewalk, ADA curb-cuts, drainage)</td>
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<td>SR-140/33</td>
<td>SR-140/33 Roundabout (Construction)</td>
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<td>Gustine</td>
<td>5th Street &amp; 4th Avenue</td>
<td>Roundabout @ 5th Street &amp; 4th Avenue</td>
<td>Road Capacity</td>
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<td>Sullivan Road</td>
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**Livingston Total:** $22,142
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<th>Total Cost ($1,000's)</th>
<th>Funding Sources</th>
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<tbody>
<tr>
<td>Livingston</td>
<td>Widen / reconstruct Hammett, Winton, Main interchanges with SR 99. Winton is the top priority followed by Hammett given the development potential</td>
<td>Road Ops/Safety 2020 $15,000</td>
<td>Measure V/SB-1/STIP/Local</td>
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<td>Livingston</td>
<td>Roundabout at Briarwood at B Street</td>
<td>Road Ops/Safety 2022 $3,500 Measure V/SB-1/STIP/Local</td>
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<td>Los Banos</td>
<td>Merced College Bike/Pedestrian Trail</td>
<td>Badger Flat Rd/SR-152 to Merced College</td>
<td>Active (Bike/Ped) 2020 $1,200 Measure V</td>
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<td>Los Banos</td>
<td>Pioneer Road Widening</td>
<td>SR-152/Merced College to Pioneer Rd/Ward Rd</td>
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<td>Los Banos</td>
<td>H Street, Badger Flat Road, Overland Avenue Widening</td>
<td>Badger Flat - SR-152 to Ingomar Grade; H Street; Overland Ave - Nantes Ave. to H Street</td>
<td>Road Capacity 2025 $25,000 Measure V</td>
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<td>Los Banos</td>
<td>Mercey Springs Road (SR-165) Widening</td>
<td>SR-152 to Henry Miller Road</td>
<td>Road Capacity 2035 $20,000 Measure V</td>
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<tr>
<td>Los Banos</td>
<td>Sidewalk Infill at Various Locations</td>
<td>Berkeley Drive to St. Francis Drive at various locations; Also, on Route 152 from 7th Street to H Street (PM 20.6/21.1) at various locations</td>
<td>Active (Bike/Ped) 2020 $319 ATP, CMAQ</td>
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<tr>
<td>Los Banos</td>
<td>Class II Bike Paths: H Street - Badger Flat from Pacheco to H Street – Overland (Triangle)</td>
<td>Active (Bike/Ped) 2030 $4,500 ATP, CMAQ</td>
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<tr>
<td>Los Banos</td>
<td>Downtown Complete Streets – street and sidewalk rehab, new curbs and finished street surface with storm drains</td>
<td>Complete Streets 2024 $6,000 Measure V/SB-1/STIP/Local</td>
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<tr>
<td>Los Banos</td>
<td>Multipurpose Bike/Pedestrian Path (8-10 ft.) and Ped/Bike bridge across creek</td>
<td>Active (Bike/Ped) 2022 $4,000 Measure V/SB-1/STIP/Local</td>
<td></td>
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<td>Los Banos</td>
<td>Local Projects: Cape Seal, ADA corner, downtown renovation – City to provide list</td>
<td>Road Maintenance 2030 $6,000 Measure V/SB-1/STIP/Local</td>
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<td>Los Banos Total:</td>
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<td></td>
<td></td>
<td></td>
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<td>John Muir Elementary School Safe Route to School Sidewalk and Ramp Project</td>
<td>Active (Bike/Ped) 2021 $1,405 ATP</td>
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<tr>
<td>Merced</td>
<td>Motel Drive Multi-use Pathway</td>
<td>Active (Bike/Ped) 2020 $675 ATP</td>
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<tr>
<td>Merced</td>
<td>Westerly Bike Path Connection</td>
<td>Active (Bike/Ped) 2018 $1,202 FTIP</td>
<td></td>
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<tr>
<td>Agency</td>
<td>Title</td>
<td>Limits/Description</td>
<td>Type</td>
<td>Year</td>
<td>Total Cost ($1,000's)</td>
<td>Funding Sources</td>
</tr>
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<tr>
<td>Merced</td>
<td>Right-Turn Channelization on Southbound SR-59 Approaching 16th Street.</td>
<td></td>
<td>Road Ops/Safety</td>
<td>2019</td>
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<td>CMAQ</td>
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<td>Merced</td>
<td>Traffic Signal at SR-59 &amp; 16th Street.</td>
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<td>Road Ops/Safety</td>
<td>2019</td>
<td>$449</td>
<td>CMAQ</td>
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<td>Merced</td>
<td>M St at North Bear Creek Dr.</td>
<td>Bridge rehab</td>
<td>Road Maintenance</td>
<td>2018</td>
<td>$2,762</td>
<td>BPMP</td>
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<td>Merced</td>
<td>G St 1.08 mi NE from Rt 99</td>
<td>Bridge rehab</td>
<td>Road Maintenance</td>
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<td>Merced</td>
<td>Black Rascal Bridge Widening (SR-59)</td>
<td>SR-59, Black Rascal Creek (Santa Fe Dr.)</td>
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<td>2022</td>
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<td>Measure V</td>
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<td>Merced</td>
<td>Bellevue Road Widening</td>
<td>SR-59 to Lake Rd</td>
<td>Road Capacity</td>
<td>2035</td>
<td>$41,375</td>
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<td>Merced</td>
<td>Mission Ave Road Widening</td>
<td>SR-59 to SR-99 (approximately)</td>
<td>Road Capacity</td>
<td>2030</td>
<td>$27,772</td>
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<td>Merced</td>
<td>Parsons Avenue Bridge</td>
<td>Parsons Ave, Bear Creek bridge</td>
<td>Road Capacity</td>
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<tr>
<td>Merced</td>
<td>Childs Ave Sidewalk</td>
<td>Parsons Ave to Campus Pkwy</td>
<td>Active (Bike/Ped)</td>
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<td>$18,372</td>
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<td>Merced</td>
<td>Parsons Avenue Improvement</td>
<td>New Road Construction from SR-140 to Stretch Rd; Overpass over BNSF ROW; Bridge at Bear Creek</td>
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<td>Merced</td>
<td>ACE Train Extension to Merced</td>
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<td>High-Speed Rail to Merced</td>
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<td>Merced</td>
<td>V Street from 16th to 18th</td>
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<tr>
<td>Merced</td>
<td>R Street from 16th to 18th</td>
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<td>Road Maintenance</td>
<td>2030</td>
<td>$500</td>
<td>Measure V/SB- 1/STIP/Local</td>
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<tr>
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<td>G St. from Childs to 13th</td>
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<tr>
<td>Merced</td>
<td>Yosemite from R Street to M Street</td>
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<td>Road Maintenance</td>
<td>2030</td>
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<td>Measure V/SB- 1/STIP/Local</td>
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<tr>
<td>Merced</td>
<td>Mansionette to Parsons or Mckee</td>
<td></td>
<td>Road Maintenance</td>
<td>2030</td>
<td>$500</td>
<td>Measure V/SB- 1/STIP/Local</td>
</tr>
<tr>
<td>Merced</td>
<td>SR 59 Widening between 16th and Olive</td>
<td></td>
<td>Road Capacity</td>
<td>2030</td>
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<td>Measure V/SB- 1/STIP/Local</td>
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<tr>
<td>Merced</td>
<td>Intersection Channelization at 16th/Olive</td>
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<td>2030</td>
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<td>SR 59 n/o Olive – replace and widen bridge.</td>
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<td>Road Ops/Safety</td>
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<td>M St. Bridge – Construction</td>
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<td>Merced</td>
<td>G St. Bridge – Construction</td>
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<td>Road Maintenance</td>
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<td>$2,000</td>
<td>Measure V/SB- 1/STIP/Local</td>
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**Total:** $329,031
10. Environmental Justice

An important requirement in preparing the 2018 RTP/SCS is ensuring that Environmental Justice (EJ) is addressed and adhered to in the 2018 RTP/SCS Scenario 2: Preferred Scenario/Infill Emphasis (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 of environmental 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).

A number of federal and state laws and regulations govern how EJ is incorporated into the 2018 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 discrimination 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 requires 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 2018 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 Plan. 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 chapter details MCAG’s efforts to address EJ and provides results from six performance measures, as well as a benefits and burdens analysis evaluating the equity of The Plan’s decision-making and investment strategy. The Plan EJ benefits and burdens are compared against Scenario 1: Compact Development/Business as Usual (or “BAU”). This chapter also provides an overview of the outreach efforts associated with the planning process for the 2018 RTP/SCS.

**Assessing Equity**

**Performance Measures**

To determine whether EJ Communities (i.e., low-income and minority populations) in Merced County have an equitable share in the 2018 RTP/SCS’s transportation investments and are not disproportionately impacted by such investments, MCAG analyzes demographic and travel data from the transportation demand model. This analysis evaluates how EJ Communities are considered in the transportation investment strategies compared to non-EJ Communities. This 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

Basic socio-economic information was collected from the Census Bureau about the people who live in the Merced region. Specifically, data from the 2011-15 American Community Survey (ACS) was gathered to establish racial, ethnic, and income-distribution patterns in the region. Census data offers the advantage of providing a diverse demographic profile at the census block level that roughly corresponds to the Traffic Analysis Zones (TAZs) used in the three-county travel-demand forecasting model.

The Census Block Group, which is the smallest level of geography for which both racial/ethnic and income data are available, was chosen as the geographic unit of analysis. Census Bureau definitions of racial and ethnic populations were used to identify minority status among persons living in Merced County. Minority persons are those who identify as Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, some other race, multiple races, or Hispanic/Latino of any race. The ACS estimates of median household income were used to define “low-income” populations for Merced County.

For the 2018 RTP/SCS, EJ areas are defined as those Census Block Groups that contained 60 percent or more of minority populations or had a median household income of $33,970 or less. These are Census Block Groups with slightly higher minority concentrations than the countywide average (55 percent) or with households making 80 percent or less of the median household income for the county ($424,462). Census Block Groups with populations less than one person per acre were eliminated from the analysis. EJ and non-EJ Census Block Groups were then translated into the traffic analysis zones (TAZs), which represent the basic geographical unit of the travel demand model. All TAZs that were more than 50 percent covered by an identified EJ Census Block Group were included as EJ TAZs.

To determine if the proposed plan investments unduly benefit or burden any one population under the Plan, six performance measures were developed to compare the social equity impacts expected by 2035 within EJ areas and non-EJ areas.

**Percentage of Low-Income Housing/Minority Population Within a Half-Mile of Transit**

For populations with limited financial, physical or other means, having convenient access to transit is critical. To analyze the equity of the Plan’s transit investments, a comparison of households with walking access (i.e., within one half-mile) to a transit stop in EJ areas versus non-EJ areas was prepared. Under the Plan, in 2035 an estimated 45,115 total households in Merced County will be located within a half-mile of transit. A total of 63.6 percent of households in Merced County are in EJ areas, while 75.9 percent of households within one-
half mile of transit are in EJ areas. This means that EJ area households will have greater transit access than non-EJ area households.

**Percentage of Low-Income Housing/Minority Population Within a Half-Mile of Frequent Transit**
A similar transit analysis as above was performed with respect to households within a half-mile of frequent transit. Under the Plan, in 2035 an estimated 32,046 total households in Merced County will be located within a half-mile of frequent transit. Of these households, 76.4 percent will be households located in EJ areas. Access to frequent transit benefits EJ areas at an even greater rate than general transit services as a whole.

**Percentage of Housing Within 500 feet of a Major Transportation Corridor**
Proximity to major transportation facilities can increase a population's exposure to health-based air contaminants emitted from motor vehicles, as well as from road dust. To determine the proportion of EJ communities that may be subject to these conditions, an analysis was performed to compare the percentage of the EJ households relative to non-EJ households located within 500 feet of a major transportation facility, defined as any interstate or state-owned highway and arterial. Under the Plan, 4.8 percent of EJ households will be located near major transportation corridors in 2035 compared to 4.7 percent of all households.

**Disparity in Countywide Housing-Type Stock**
The Plan land use was developed using the scenario planning software Envision Tomorrow. Envision Tomorrow provides a suite of comparative measures to develop indicators for a range of factors, including housing type distribution. A greater mix of housing types provides households a greater ability to match their housing choice to their needs. These built-in indicators were used to evaluate the disparity in housing types of the Plan relative to BAU. The Plan provides a good mix of housing types, with over 60 percent of new housing dedicated to multifamily housing and townhomes, and with less than 40 percent dedicated to single-family homes. This compares with 44 percent of new housing dedicated to multifamily housing and townhomes and 56 percent dedicated to single-family homes under BAU. Further, the Plan will have half as many large lot and conventional lot single-family homes than BAU, resulting in more affordable housing types. This wider range of housing choices combined with smaller lot sizes will likely generate more housing choice for EJ communities and increase their ability to meet their housing needs.

**Availability and Variety of Housing at All Economic Levels**
In addition to evaluating the distribution of housing types, Envision Tomorrow was also used to analyze the availability of new housing for the region by income level. It is important to provide not only a greater mix of housing, but also affordable options for all populations as well. The Plan provides greater access to housing for lower income households. The average household income required to afford new multi-family housing will decrease from $51,799 under BAU to $46,659 under the Plan, a reduction of over $5,000 a year. Similarly, the average household income required to afford new single-family housing will decrease from $80,813 under BAU to $77,721 under the Plan, a difference of more than $3,000. It should be emphasized that lower income households will benefit in many ways other than just more affordable housing. Under the Plan, 10.4 percent of new households in low-income EJ areas will be within walking distance (0.5 miles) of a park compared with only 5.9 percent under BAU. And 8.6 percent of new households in low-income EJ areas will be within walking distance of a transit stop compared with only 4.1 percent under BAU.
Benefits and Burdens Analysis

Table 7.1 shows the impact and benefit profiles of key capacity increasing projects included in this RTP. Overall, over 78 percent of project benefits serve EJ areas. Of these project benefits, 33 percent go to lower income areas, while 72 percent are in Hispanic or non-White population centers. The RTP projects provide benefit to EJ areas by 14.6 percent more than would be needed to provide equal benefit to the county residents living in EJ areas. One project is located in an EJ area, while the remaining seven traverse both EJ and non-EJ areas.

### Table 7.1 – Benefits and Burdens

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<th>Project</th>
<th>EJ Area</th>
<th>Trip Ends</th>
<th>Low Income</th>
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<th>EJ</th>
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<tr>
<td>SR 99 Widening - Atwater to Merced SB</td>
<td>Both</td>
<td>60,298</td>
<td>29,884</td>
<td>49.60%</td>
<td>48,713</td>
</tr>
<tr>
<td>SR 99 Widening - Atwater to Merced NB</td>
<td>Both</td>
<td>53,428</td>
<td>26,186</td>
<td>49.00%</td>
<td>43,208</td>
</tr>
<tr>
<td>AME Segment 2</td>
<td>Both</td>
<td>11,945</td>
<td>1,646</td>
<td>13.80%</td>
<td>10,150</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>317,484</td>
<td>116,993</td>
<td>33.31%</td>
<td>246,695</td>
</tr>
</tbody>
</table>

Table 7.2 shows that the non low-income population benefits more from roadway expenditures per capita than low-income populations based on their commute mode splits. Low-income households benefit significantly more from transit and bicycle and pedestrian expenditures due to their disproportionately use of transit, walking, and bicycling for commutes compared to non low-income populations. Additionally, the total per capita benefit for low-income populations based on this analysis shows that low-income populations will disproportionately benefit from overall transportation expenditures by a ratio of 1.66 to 1 compared to the non low-income population of the county.

### Table 7.2 – Per Capita Project Expenditures by Mode and Income Status

<table>
<thead>
<tr>
<th>Commute Mode</th>
<th>Low-Income Population</th>
<th>Non-Low-Income Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway</td>
<td>$2,261</td>
<td>$5,974</td>
</tr>
<tr>
<td>Transit</td>
<td>$3,953</td>
<td>$3,919</td>
</tr>
<tr>
<td>Bicycle/Pedestrian</td>
<td>$513</td>
<td>$468</td>
</tr>
<tr>
<td>Total</td>
<td>$6,727</td>
<td>$10,361</td>
</tr>
</tbody>
</table>
Conclusion
The region-wide EJ analysis, based on six identified performance measures, 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 frequent transit service, and fewer households within 500 feet of major transportation facilities in the Plan as compared to BAU. Additionally, the Plan will result in a greater mix of housing and more affordable housing (both single-family and multi-family) than BAU. The benefits and burdens analysis, including a focus on State and Federal Transit funding, also shows that a significant portion of transit funds will benefit minority populations.

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. A financial analysis of expenditures by mode share for low-income populations and transit expenditures by minority populations revealed that while roadway expenditures slightly favor non-low-income populations, transit and bicycle/pedestrian expenditures generate an overall benefit for low-income and minority populations in the Merced region.
11. Public Participation

This plan was developed in partnership with Merced County residents through an extensive program of public involvement 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 materials were 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 development process. 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
Outreach highlights include the following:

- 13 Public Workshops
- Bilingual Virtual Workshop
- 7 City Council and Board of Supervisors Presentations
- 400 attendees at over 15 Community Group Presentations
- 7 eBlasts sent to stakeholders (159+ recipients)
- Project website averaging 250-350 unique visits per month
- Print ads in the months of July, October, and May 2017

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 25 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 2018 RTP/SCS (the Plan), as well as to highlight various environmental benefits associated with the Plan.

Specific comments received from the public during workshops are provided in Appendix P.

Community Workshops

Community workshops were held throughout the course of the Plan’s development to ensure that all interest groups were 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 in three series, or rounds (1, 2, and 3), throughout the County in order to gather public input on key elements of the Plan. These workshops allowed the public to engage with the RTP/SCS planning process and provide their input on the land use and transportation improvement scenarios. The schedule of workshops was as follows:

**Round 1:**
- Monday, July 17 – Los Banos
- Wednesday, July 19 – Livingston
- Thursday, July 20 – Merced
- Wednesday, August 16 – Los Banos

**Round 2:**
- Monday, October 23 – Los Banos
- Tuesday, October 24 - Livingston
- Thursday, November 2 - Merced
- Monday, November 6 – Planada
- Wednesday, January 10 - Planada

**Round 3:**
- Wednesday, May 23 - Merced
- Thursday, May 24 – Los Banos
- Wednesday, May 30 - Livingston
- Thursday, May 31 - Planada

Project Website

The website provided a 2018 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.