



Madera County Transportation Commission

2014 Regional
Transportation Plan and
Sustainable Communities
Strategy (RTP & SCS)
Amendment #1
June 21, 2017

2014 Regional Transportation Plan and Sustainable Communities Strategy

Amendment #1

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1. INTRODUCTION

The Madera County Transportation Commission (MCTC) has prepared an amendment (Amendment #1) to the 2014 Regional Transportation Plan and Sustainable Communities Strategy (2014 RTP/SCS). The 2014 RTP/SCS, adopted on July 24, 2014 by MCTC, included Chapter 6, the Sustainable Communities Strategy (SCS), which details how the Madera County region will reduce greenhouse gas (GHG) emissions to state-mandated levels over time. The inclusion of the SCS is required by Senate Bill 375, and stresses the importance of meeting GHG per capita emission reduction targets set by the California Air Resources Board (CARB). Unfortunately, the technical results of the modeling effort yielded GHG reduction results opposite of their anticipated outcome. The 2014 Madera County RTP/SCS was adopted with emission results that did not meet the GHG budgets established by the California Air Resources Board (ARB).

Table 6-5 in the adopted 2014 RTP/SCS provides the results of the SCS Scenario GHG reductions from the 2005 Base Year for year 2020 of 5 percent and 10 percent by the year 2035. Results show that the 2014 RTP and SCS did NOT meet the established emission reduction targets for either target year. As a result, it was appropriate for MCTC to review the transportation VMT reductions and the transportation model in its effort to meet the targets. Based upon the review, MCTC has prepared Amendment #1 to the 2014 RTP/SCS to reflect how GHG Emissions Targets will be met.

TABLE 6-5 (From the Adopted 2014 RTP/SCS)
Demonstration of GHG Emission Reduction Targets

Year	GHG Per Capita Reduction Targets	MCTC Per Capita GHG Reduction	Met Target?
2020	5.0%	+13.7%	No
2035	10.0%	+9.1%	No

Development of the 2014 Madera County RTP/SCS was a collective effort, which required meaningful collaboration with each of the three local governments (cities of Chowchilla and Madera and Madera County), State and federal agencies, local tribal governments, community interest groups, and public stakeholders to identify land-use and transportation opportunities within the region that will address the needs of the growing population and ensure compliance with State and federal requirements. As a result of this effort, MCTC developed varying planning scenarios built-up from a status quo planning assumption. Each scenario introduced new planning principles and parameters meant to address the intent of SB 375 and reduce GHG generated in Madera County. At all levels of outreach, the most aggressive planning scenario developed was received amiably and recommended to be forwarded in the process. This aggressive planning scenario would be selected as the preferred planning scenario of the

2014 RTP/SCS. The preferred scenario calls for a variety of shifts in planning parameters including, but not limited to, a demographic shift in housing share, changes to lot sizes, shift in employment share, enhancements to public transit systems, and enhancement of the non-motorized transportation network. These principles are most heavily emphasized in Madera County’s established or planned urban cores and less emphasized in rural areas, which lack adequate population densities.

The parameters of the preferred RTP/SCS Scenario were utilized in the then newly developed Madera County Transportation Model at that time or in 2013/14. Unfortunately, the technical results of the modeling effort yielded GHG reduction results opposite of their anticipated outcome. The 2014 Madera County RTP/SCS was adopted with emission results that did NOT meet the GHG budgets established by the California Air Resources Board (CARB).

2014 Madera County RTP/SCS GHG Targets

In 2011, the CARB issued a 5% reduction target to each of the eight (8) Metropolitan Planning Organizations (MPOs) in the San Joaquin Valley including MCTC. CARB agreed that the targets would be applicable to each MPO independently of other Valley MPOs. The targets included a percentage reduction of per capita greenhouse gas emissions from 2005 of 5 percent by the year 2020 and a reduction in GHG emissions of 10 percent by the year 2035. Developing the SCS requires meaningful collaboration with each of the local agencies, as well as stakeholders to identify land use and transportation planning opportunities around the region that will address the needs of the growing population and ensure compliance with State and federal requirements.

Analysis Tools Applied

Following the adoption of the 2014 RTP/SCS, MCTC staff immediately began analyzing what led to the greenhouse gas (GHG) emission results achieved during development of the adopted 2014 RTP/SCS. Given the wide gap between emissions results and emissions targets, despite pursuing the most feasibly aggressive SCS strategy proposed, MCTC staff began to analyze the planning tools utilized in the RTP/SCS emissions reporting process; in particular the 2013/14 Madera County Transportation Model.

This analysis concluded the tools used by MCTC for the adopted 2014 RTP/SCS to account for GHG emissions could be enhanced to greatly improve accuracy in the reporting of emission results, particularly for the 2013/14 forecasting model. An extensive effort was undertaken to review the input data used in the transportation model.

The bulk of the MCTC staff review focused on how land use and socioeconomic data (SED) was allocated in the model's base year and SB 375 comparison year (2010 and 2005 respectively), the significant roadway network utilized in the model, and the boundaries of traffic analysis zones (TAZs) used to distinguish individual geographic areas in Madera County. With these improvements to the model, the MCTC model validates better across the wide range of validation metrics that are required per the California RTP Guidelines. Further detail regarding how the transportation model was enhanced is provided in Section 2 of this Amendment.

A great amount of effort has gone into making sure MCTC possesses the most adequate and accurate planning tools possible for utilization in the 2014 RTP/SCS Amendment #1 development process. The results of this effort have proven beneficial. All changes made to the model have been scrutinized to make sure that nothing implemented is inconsistent with the established and adopted measures prescribed in the preferred SCS scenario.

It should be noted that none of the multimodal improvement projects listed in the adopted 2014 RTP/SCS have been changed as a result of the enhanced modeling efforts described above.

2016 Transportation Model Enhancement Results

Based upon the set of transportation model enhancements and revisions discussed above, GHG reductions for the year 2020 and 2035 have been met (reference Table 1).

Next Steps

Now that both the Year 2020 and 2035 targets have been achieved using the 2016 Transportation Model, the next step is for MCTC to amend the 2014 RTP/SCS (Amendment #1) and prepare the associated Addendum PEIR. The Addendum PEIR has been prepared to address potential environmental effects related to Amendment #1 of the 2014 RTP/SCS. The scope of the proposed 2014 RTP/SCS Amendment #1 is narrow and targeted at incorporating enhancement results reflected in the 2016 MCTC Transportation Model including the resulting greenhouse gas (GHG) and air quality emissions, and changes to noise, energy, and transportation analysis results.

TABLE 1
2016 Madera County Transportation Model
2020 and 2035 Target Results

Description	Emissions or Target	Met Target?
2005 CO2 Emissions/Capita	17.0	
Target 5% Oer Capita From 2005	0.85	
2020 Target	16.16	
2020 CO2 Emissions/Capita	14.90	
2020 CO2 Reduction Needed (#/Capita)	-1.27	
2020 CO2 Reduction Needed (4 Vehicle Types)	-265816	
Target 10% per Capita From 2005	1.70	
2035 Target	15.31	
2035 CO2 Emissions/Capita	13.00	
2035 CO2 Reduction Needed (#/Capita)	-2.29	
2035 CO2 Reduction Needed (4 Vehicle Types)	-654544.0	
Results		
Change in CO2 Per Capita from 2005 to 2020	-12.5%	YES
Change in CO2 Per Capita from 2005 to 2035	-23.5%	YES

MCTC 2014 RTP/SCS Amendment #1 Contents

Amendment #1 consists of the following sections including:

- ✓ [Section 1 - Introduction](#) - provides a brief overview of the 2014 RTP/SCS Amendment #1 development process including reasons why an amendment to the adopted 2014 RTP/SCS is necessary

- ✓ [Section 2 - Changes to the Adopted 2014 RTP/SCS](#) – includes sections of the adopted 2014 RTP/SCS that have changed as a result of MCTC Transportation Model enhancements. These Model enhancements resulted in major changes to Chapter 1 - Executive Summary, Chapter 3 - [The Madera Region: Past, Present, & Future](#) and Chapter 6 - [Creating a Sustainable Future](#). These revised Chapter are included at the beginning of this section. Other changes were made to sections of Chapter 2 – [Requirements, Trends & Content](#), Chapter 5 - [Delivering the Plan for Change](#), Chapter 8 - [Public Involvement for Change](#), and Chapter 9 - [Environmental Considerations](#) and follow the revised chapters. All changes reflected in this Section replace chapters or chapter sections as contained in the 2014 RTP/SCS adopted on July 24, 2014. The 2017 Federal Transportation Improvement Program (FTIP) and 2014 RTP/SCS Conformity Finding is incorporated by reference and available for review at www.maderactc.org.

2. CHANGES TO THE ADOPTED 2014 RTP/SCS

This section of the 2014 RTP/SCS Amendment #1 includes sections of the adopted 2014 RTP/SCS that have changed as a result of MCTC Transportation Model enhancements. These Model enhancements resulted in major changes to Chapter 1 - Executive Summary, Chapter 3 - The Madera Region: Past, Present, & Future and Chapter 6 - Creating a Sustainable Future. These revised Chapter are included at the beginning of this section. Other changes were made to sections of Chapter 2 – Requirements, Trends & Content, Chapter 5 - Delivering the Plan for Change, Chapter 8 - Public Involvement for Change, and Chapter 9 - Environmental Considerations and follow the revised chapters. All changes reflected in this Section replace chapters or chapter sections as contained in the 2014 RTP/SCS adopted on July 24, 2014.

Note: The 2017 Federal Transportation Improvement Program (FTIP) and 2014 RTP/SCS Conformity Finding is incorporated by reference and available for review at www.maderactc.org.

Chapter 1 Executive Summary Changes (is replaced with the following Chapter)

1. Executive Summary

Background

MCTC is required to update the Regional Transportation Plan (RTP) to reflect the existing and future regional transportation system in Madera County. The 2014 Update and Amendment #1 reflect the horizon or “planning” year of 2040, ensuring that the region’s transportation system and implementation policies/programs will safely and efficiently accommodate growth envisioned in the Land Use Elements of the Cities of Chowchilla and Madera and Madera County, in the RTP and in the Sustainable Communities Strategy (SCS). As the Regional Transportation Planning Agency (RTPA) and Metropolitan Planning Organization (MPO) for Madera County, MCTC is responsible for development of the RTP and the SCS (reference Chapter 6 - “*Creating a Sustainable Future*” of the 2014 RTP and SCS).

Project Location and Description

Madera County is located in California's San Joaquin Central Valley). Encompassing 2,147 square miles, the County is situated in the geographic center of the State of California along State Route (SR) 99, approximately 18 miles north of Fresno. The County has an average altitude of 265 feet ranging from 180 to 13,000 feet above sea level. The San Joaquin River forms the south and west boundaries with Fresno County. To the north, the Fresno River forms a portion of the boundary with Merced County. Mariposa County forms the remainder of the northern boundary. The crest of the Sierra Nevada Mountains forms the eastern boundary with Mono County. Generally, the County can be divided into three broad geographic regions – the Valley area on the west; the foothills between Madera Canal and the 3,500 foot elevation contour; and the mountains from the 3,500 foot contour to the crest of the Sierra Nevada Mountains.

Regional Transportation Plan

The RTP is a long-range transportation plan providing a vision for regional transportation investments over at least a 20-year period. Using growth forecasts and socioeconomic trends (reference Chapter 3 “*Madera County – Past, Present, & Future*”), the Plan considers the role of transportation including economic factors, quality of life issues, and environmental factors. The RTP provides an opportunity to identify transportation strategies today that address our mobility needs for the future. The RTP is updated every four (4) years to reflect changes in economic trends, state and federal project and funding requirements, progress made toward project implementation, and current socioeconomic trends. Transportation projects must be included in the RTP in order to qualify for federal and state funding. The last RTP was adopted by MCTC’s Policy Board in July 2014 and Amendment #1 will be considered for adoption in April 2017. The next RTP Update will be due in 2018.

Sustainable Communities Strategy

The SCS is a new element of the RTP that will demonstrate the integration of land use, transportation strategies, and transportation investments within the RTP. This new requirement was put in place by the passage of SB 375, with the goal of ensuring that the MCTC region can meet its regional greenhouse gas reduction targets set by the California Air Resources Board (ARB). In 2011, the California Air Resources Board (CARB) issued a 5% reduction target to each of the eight (8) Metropolitan Planning Organizations (MPOs) in the San Joaquin Valley including MCTC. CARB agreed that the targets would be applicable to each MPO independently of other Valley MPOs. The targets included a percentage reduction of greenhouse gas emissions from 2005 of 5% by the year 2020 and a reduction in GHG emissions of 10% by the year 2035. Developing the SCS requires meaningful collaboration with each of the three (3) local governments, as well as stakeholders to identify land-use and transportation opportunities around the region that will address the needs of the growing population and ensure compliance with State and Federal requirements.

RTP and SCS Contents

The RTP and SCS consists of various elements referenced in federal statutes and in the State RTP Guidelines including:

- ✓ [*Chapter 1: The 2014 RTP and SCS – A Summary*](#) – provides a brief summary of the RTP and SCS reflecting the major findings and recommendations found in each chapter of the Plan
- ✓ [*Chapter 2: Requirements, Trends & Contents*](#) – describes the purpose of the RTP and SCS process, associated mandates, the existing transportation system in Madera County, and the contents of the Plan itself
- ✓ [*Chapter 3: The Madera Region: Past, Present, & Future*](#) – provides a comprehensive overview of the Region including growth and development, and planning forecasts and assumptions
- ✓ [*Chapter 4: A Shared Vision*](#) - provides a comprehensive listing of goals, objectives, and strategies that address the short- and long-term mobility and accessibility needs and planning requirements for the County
- ✓ [*Chapter 5: Delivering the Plan for Change*](#) - provides a comprehensive assessment of needs and issues considering the goals and objectives contained in Chapter 4 – “A Shared Vision”, describes the air quality conformity requirements and issues, includes a multimodal element addressing the needs and issues, inventory, accomplishments, and an assessment of future demand for all modes of transportation including highways and arterials, mass transportation, aviation, non-motorized systems, goods movement, TDM, and ITS needs and analysis. The Element also contains the actions necessary to support the goals and objectives referenced in the Policy Element and in the needs assessment

- ✓ [Chapter 6: Creating a Sustainable Future](#) - Involves working with our partners, local governments, and stakeholders to identify a transportation system supported by a land use pattern that reduces vehicle trips, vehicle miles traveled (VMT), and greenhouse gas emissions and addresses requirements set forth in SB 375
- ✓ [Chapter 7: Investing In Change](#) - provides a thorough assessment of project costs and revenue assumptions for each mode of transportation. The RTP must be financially constrained in accordance with air quality conformity requirements. As such, this chapter must ensure that projects, which are needed to enhance mobility and accessibility throughout the County, are also financed within the timeframe of the Plan (year 2040) and reduce air emissions consistent with reduction targets. This chapter also includes a description of unmet transportation needs, maintenance and operation needs, and the potential for new financing strategies/sources of funding to address revenue shortfalls, if applicable
- ✓ [Chapter 8: Public Involvement for Change](#) – includes a thorough review of the public involvement and community outreach program for the Project
- ✓ [Chapter 9: Environmental Considerations](#) - references important findings of the air quality conformity process, the EIR document and process, and additional supportive information necessary to provide a complete and thorough understanding of the planning and environmental review process
- ✓ [Chapter 10: Addressing Environmental Justice](#) – provides a description of MCTC’s environmental justice program that ensures early and continued public involvement, and an equal distribution of transportation projects to all areas of the region, paying close attention to the needs of low income and minority populations.
- ✓ [Chapter 11: Measuring Up](#) - provides a description of the various monitoring programs that will be used by MCTC to monitor the performance of the regional transportation system
- ✓ [Appendices](#) - includes the San Joaquin Valley Regional Transportation Overview and technical and other appendices detailing the methodologies applied, a glossary of terms, and other supportive information

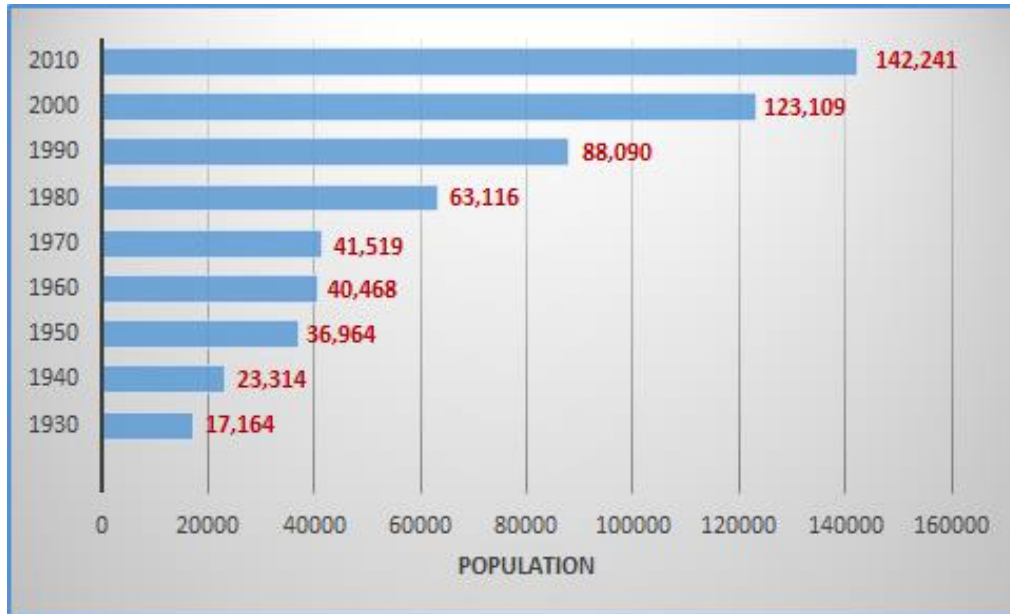
Demographic Changes

Current Population and Employment

Historical demographic trends and projections of both population and employment are essential to development of the RTP. The population estimates and projections that are referenced in the RTP and SCS and in Figure 1-1 were identified from U.S. Bureau of the Census, California Department of Finance (DOF), California Employment Development Department (EDD), Central California Futures Institute, or from other data and are consistent with assumptions used in the Madera County Regional Traffic Model.

FIGURE 1-1

Madera County Historical Population Growth: Years 1930 - 2010



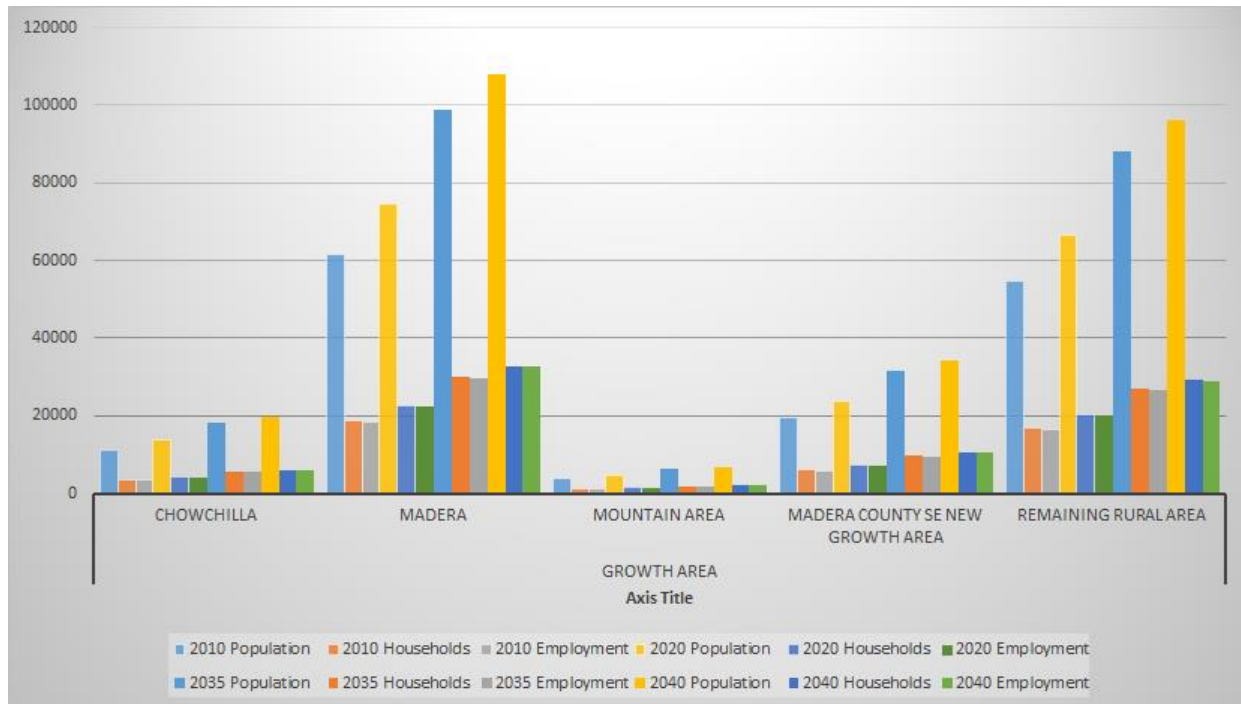
Source: U.S. 2010 Census

2010 Population excludes group quarters population

Future Population and Employment Projections

Population and employment estimates/projections for Madera County are provided for Years 2010, 2020, 2035 and 2040 are referenced in Figure 1-2. The estimates/projections of population, households and employment were allocated to the broad geographic areas presented in the table and further allocated to traffic analysis zones (TAZs) as part of the Madera County Regional Transportation Model process. Socioeconomic conditions for each of these years is important for purposes of establishing the modeling base year or Year 2010, future years 2020 and 2035 or years for which the SCS has been developed to determine the greenhouse gas (GHG) emission reductions, and future year 2040, which is the horizon year for development of the RTP.

FIGURE 1-2
Madera County Development Projections
2010, 2020, 2035, and 2040



Source: MCTC 2016 Transportation Model and VRPA Technologies, Inc.
Includes group quarters population

Existing Transportation System

Highways and Arterials

Regional access to Madera County is provided by six state highways -- State Routes (SR) 41, 49, 99, 145, 152 and 233, with SR 41 and SR 99 carrying the bulk of North-South travel. Madera County's street network generally consists of a series of freeways, expressways, arterials, and collectors including: Roads 4, 9, 16, 23, 26, 36, 200, 223, 274, 400, 415, 600, Avenues 7, 7 ½, 9, 12, 14, 18 ½, 21, and 26, and Firebaugh and Children's Boulevards.

✓ Regionally Significant Roads System

MCTC, in conjunction with its member agencies and Caltrans, has developed the "Regionally Significant Road System" for transportation modeling purposes based on the FHWA Functional Classifications System of Streets and Highways. In general, the classification systems used by local agencies coincide with the FHWA Functional Classification System. However, design standards and geometrics for particular streets within local jurisdictions, are subject to specific design criteria of the local agency. There is a significant distinction between the Regionally Significant Road System and

the Countywide Network. Regionally significant projects are statutorily required to be treated separately for air quality reasons.

✓ **Level of Service Analysis**

Results of the LOS analysis indicate that two (2) segments along the Regionally Significant Road System are currently operating at LOS “D” through “F” for State Routes and no or zero local street and highway segments are operating at LOS “E” or “F”. The resultant list of existing deficient facilities along the Regionally Significant Roads System and other important facilities provides an opportunity for MCTC, Caltrans, and local agencies to focus on projects that will improve the overall LOS of the regional network in the future.

Existing Public Transportation

Public transit in Madera County includes Madera Area Express fixed route and Dial-a-Ride, Madera County Connection, Eastern Madera Senior Bus, Escort Program, Chowchilla Area Transit Express, CatLinx, specialized social service transportation services, Greyhound, and taxi service. Public transportation is provided by fixed-route and demand-response transit systems.

✓ **Social Service Transportation**

Five key social service agencies provide transportation in Madera County. These agencies largely provide service to their clients and to specific sites.

✓ **Private Providers**

Several private carriers provide inter-city services, including Greyhound and Madera Cab Company. Greyhound operates seven days a week from the City of Madera’s Downtown Intermodal Center on North “E” Street. Madera Cab Company provides service in Madera County seven days a week, 24 hours a day. This operator is based at the Downtown Intermodal Center.

✓ **Passenger Rail/Support Facilities**

Madera County is served by the Burlington Northern Santa Fe (BNSF) and the Union Pacific (UP) Railroads. Amtrak operates seven days a week with fourteen (14) daily stops in Madera along the BNSF Railroad alignment. The station is located on Avenue 15½ and Road 29. The nearest stop to the north is Merced and to the south, Fresno.

Aviation

The City of Madera owns and operates the Madera County Municipal Airport, which provides aviation services to approximately 18 fixed-base operators. The City of Chowchilla operates the Chowchilla Municipal Airport with 18 fixed-base operators. Fresno Yosemite International Airport (FAT) in Fresno County is the primary passenger airport facility in the region.

Non-Motorized Systems

The Cities of Chowchilla and Madera, and Madera County continue to be involved in implementing bicycle facilities. The City of Madera annually reserves a portion of its Local Transportation Fund (LTF) proceeds for the construction of bicycle and pedestrian facilities. These funds are used in conjunction with funds from the CMAQ, State Bicycle Transportation Account, and other programs to implement elements of the Madera County 2004 Regional Bicycle Transportation Plan.

Goods Movement

Goods movement in Madera County is primarily provided by trucking and freight rail services. The trucking industry includes common carrier, private carrier, contract carrier, drayage and owner-operator services, which handle both line-haul and pick-up and delivery services. A number of trucking facilities are located in Madera County including the public highway system, truck terminal facilities, freight forwarders, truck stops, and maintenance facilities. These facilities are especially concentrated along SR 99.

Transportation Demand Management

Transportation demand management (TDM) programs in Madera County primarily consist of the voluntary rideshare program, the park & ride facilities program, the alternative fuels program, and other programs that provide for congestion relief and enhanced travel.

Intelligent Transportation Systems

In addition to planning for specific modes of transportation that will serve the needs of existing and future residents, the integration of advanced transportation technologies is also important. The use of new technologies [Intelligent Transportation Systems (ITS)] will allow maximum use of the transportation infrastructure including streets and highways and transit. Further, the need for traveler information is critical in order to lessen the impacts of accidents and other events in the region. Real-time traveler information can make traveling in Madera County more enjoyable and reduce delay and congestion.

Goals

Development of the RTP goals and objectives was a key step during preparation of the plan. The RTP Roundtable and Technical Working Group developed the set of goals and objectives based on an extensive review and consideration of their vision of the regional transportation system over the next twenty-six years, along with input from the public. Results obtained during the public outreach effort provided the Roundtable and Technical Working Group with additional information needed to refine the goals and objectives.

It is important to remember that goals and objectives will, at times, compete with one another. The framework presented by the goals and objectives below should be viewed by the public as a set of guidelines against which the RTP can be assessed, while individual projects contribute to the ability of the RTP to meet these goals and objectives, and the project level information is useful in reviewing the

projects, they should not be used to rank the projects against one another. The projects, policies, and systems together create the RTP.

The following goals are intended to guide MCTC in its pursuit of quality growth and highly integrated transportation systems, reflective of the “Principles to Success” noted above. The goals are broad policy statements that describe the purpose of the plan.

1. To promote Intermodal Transportation Systems that are Fully Accessible, Encourage Quality Growth and Development, Support the Region’s Environmental Resource Management Strategies, and are Responsive to the Needs of Current and Future Travelers.
2. To Promote and Develop Transportation Systems that Stimulate, Support, and Enhance the Movement of People and Goods to Foster Economic Competitiveness of the Madera Region.
3. To Enhance Transportation System Coordination, Efficiency, and Intermodal Connectivity to Keep People and Goods Moving and Meet Regional Transportation Goals.
4. To Maintain the Efficiency, Safety, and Security of the Region’s Transportation System.
5. *To Improve the Quality of the Natural and Human Built Environment through Regional Cooperation of Transportation Systems Planning Activities.*
6. To Maximize Funding to Maintain and Improve the Transportation Network.
7. To Identify Reliable Transportation Choices that Support a Diverse Population.
8. To protect the environment and health of our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking).

Future Transportation System

To assess the needs in the region, a review of future travel characteristics projected for the year 2040, and how the individual components of the system can meet future needs has been analyzed. The systems analyzed include:

- ✓ Highways and Arterials
- ✓ Public or Mass Transportation (local bus systems, inter-regional bus systems, and passenger rail)
- ✓ Aviation (use of public and private airports and access to regional passenger airport facilities)
- ✓ Non-Motorized Travel (bicycles, trails and walking)
- ✓ Goods Movement (truck and freight rail)

- ✓ Transportation Demand Management (telecommuting, car-pooling, off-peak commuting, staggered work days, transportation system management strategies, etc.)
- ✓ Intelligent Transportation Systems or ITS (technology-based improvements that improve the efficiency of the multi-modal transportation systems)

These systems are discussed separately, but must operate as an interconnected system.

Projected 2040 Travel Characteristics

Facilities along the Regionally Significant Road System are consistent with the Functional Classification System developed by the Federal Highway Administration (FHWA). These facilities, along with other major streets and highways, are included in the Madera County Regional Transportation Model network for the Year 2040. The transportation model was recently updated in 2016 to reflect expected growth and development within the County as projected by the State Department of Finance (DOF) and derived by the Madera County Transportation Commission (MCTC) and other local agency staff. The model was calibrated and validated for the year 2010 to reflect existing traffic conditions considering actual traffic counts taken along major street and highway segments throughout the region. In addition, the street and highway network was revised to accurately reflect the required improvements in the County needed to accommodate traffic to the year 2040.

The forecast of traffic generated by the projected population, housing and employment indicates that total vehicle trips will increase significantly between 2010 and 2040. This is attributed to continued use of major transportation corridors in the region by future growth and development. Furthermore, vehicle miles of travel (VMT) in 2040 are forecast to increase from VMT in 2010. Much of the increase in VMT is due to longer distance trips; especially commute trips to and from Fresno for employment opportunities.

In addition to street and highway impacts, major impacts upon other modes of transportation would also be realized. Without implementation of planned mass transportation, aviation, non-motorized, goods movement, and other transportation-related improvements, the transportation/circulation system would be impacted. These impacts would further reduce the ability of local agencies in Madera County, Caltrans, and the associated Air Basin to improve levels of congestion and delay, and meet air quality standards. A major objective of this RTP and SCS is to identify a transportation strategy that will improve mobility between 2014 and 2040, while at the same time reducing the negative environmental impacts of travel.

Highways and Arterials

It is assumed that the regional highway system will continue to carry the vast majority of person-trip travel and will be an important part of the freight movement system. Streets and highways also will be the same routes for buses, and carpools and vanpools, resulting in a highway network that is an integral part of the public transit system. Finally, the street and highway system will also serve the needs of tourist travel and recreational travel.

Because the highway system must continue to provide reasonable service throughout the plan period, it is essential to keep it well maintained. It is also important to plan for capacity increases only where future traffic will exceed capacity and where highway expansion is determined to be the best solution that will enhance travel safety. The functional classification system will be an important guide for street and highway improvements. It will be important for the region and the State to identify those streets and highways that are of strategic importance for commerce, tourism, and commuter travel.

✓ **Highway and Arterial Performance**

To assess highway and arterial needs, MCTC developed a process to evaluate candidate capacity-increasing and rehabilitation/safety projects considering performance-based measures and level of service (LOS) analysis.

✓ **Capacity-Increasing Street and Highway Project Needs and Actions**

New freeway and other street and highway capacity-increasing improvement projects have the greatest potential for causing significant adverse environmental effects versus other modes of transportation. This RTP and SCS proposes the widening or modification of existing streets and highways, changes to the designation of regional streets and highways, and new interchange facilities along new or existing freeways. Other projects include signalization improvements (new signals, signal modifications, and signal synchronization). Based upon the results of the performance evaluation process described above, a list of candidate capacity-increasing street and highway projects (proposed to be implemented by the year 2040) was prepared.

The RTP and SCS contains over \$742 million in capacity-increasing highway and arterial improvement projects. This cost includes lane widenings, interchange improvements, new signals, and signal coordination systems. Approximately \$359 million has been allocated for State Highway improvements along SR 41, SR 49, SR 99 and SR 145. In addition, new or improved interchange projects are planned along SR 41, SR 99 and SR 233. These projects are intended to relieve bottlenecks during peak use, to close gaps, and to increase capacity along congested freeways, such as SR 41 and SR 99, which provide access to major population and employment opportunities within the San Joaquin Valley.

- Original 2014 RTP and SCS LOS Segment Analysis Using the 2013/2014 MCTC Transportation Model

Results of the original LOS segment analysis applied during development of the approved 2014 RTP and SCS along the RTP Regionally Significant Roads System are reflected in Figures 5-5 and 5-6 (Madera County) and Figures 5-7 and 5-8 (Cities of Madera and Chowchilla). LOS results are shown for the PM Peak Hour unless the AM Peak Hour results identified greater deficiencies. Results of the LOS analysis indicates that two (2) segments along the Regionally Significant Road System are currently operating at LOS “D” through “F” for State Routes and no or zero local street and highway segments are operating at LOS “E” or “F”. The resultant list of existing deficient

facilities along the Regionally Significant Roads System and other important facilities provides an opportunity for MCTC, Caltrans, and local agencies to focus on projects that will improve the overall LOS of the regional network in the future.

- 2014 RTP/SCS LOS Segment Analysis Using the 2016 MCTC Transportation Model

Table 5-3 in Chapter 5 provides a comparative analysis of roadway level of service (LOS) impact of the 2014 RTP/SCS referenced above with analysis using the enhanced and revised MCTC Transportation Model. Examining Table 5-3, it is evident that the enhanced transportation modeling indicates the same or reduced traffic impacts at most segment locations compared to the original analysis referenced above. Three cases of apparently worsened impact were examined more closely. This further analysis found that the SR 99 - SB Off Ramp at Olive Avenue will function adequately at the signalized intersection at the end of the ramp, which is the critical location controlling flows from the ramp. At the two other locations with apparent worsening LOS (Avenue 16 from Granada Drive to Schnoor Street, and Avenue 12 from Road 36 to Road 38), it was found that the apparent degradation was due to incorrect modeling and analysis assumptions. With appropriate inputs and assumptions, it was determined that each of these roadway segments will operate at an acceptable Level of Service (LOS). Therefore, the 2014 RTP/SCS Amendment #1 will not further exceed, either individually or cumulatively, the level of service standard.

Results of the LOS analysis for the RTP indicate that some facilities will fall deficient between 2010 and 2040. Improvement projects to improve these deficient levels of service would include lane widening and other operational improvements; however not all of the projects are included in the 2014 RTP and SCS “financially-constrained” program.

- ✓ Major Corridor Deficiencies/Needs/Actions

Major deficiencies identified in the LOS analysis for Year 2040 without RTP projects include SR 41 north of the San Joaquin River, Avenue 12 between SR 41 and SR 99, and SR 99 between the San Joaquin River and the Merced County Line. These deficiencies/needs, together with other issues described below set the stage for a set of actions that will be carried out by MCTC and the affected local agencies and Caltrans over the next twenty-six years.

- ✓ Street and Highway Rehabilitation/Safety Project Needs and Actions

In addition to LOS deficiencies, Caltrans and local agencies are also facing the difficult task of maintaining regional streets and highways with inadequate funding. With increased congestion expected in the future, the typical road will require some maintenance every five to ten (5-10) years, and major rehabilitation every ten (10) to 20 years. If rehabilitation and maintenance activities are

not implemented, residents will continue to experience increased accident rates and reduced system-wide efficiency.

- *Enhanced Rehabilitation and Safety Improvements* - With the current backlog of highway and arterial maintenance and the pavement deterioration that goes with an aging roadway system, costs will increase dramatically through the RTP horizon year (2040) to keep the highway system operational. The RTP and SCS identifies additional funds principally for arterials that minimize roadway and bridge decay. Recent studies have also identified the increased cost to users as under-maintained roadways degrade tires and shock absorbers, creating wear and tear on engines and connections throughout the vehicle. Providing additional funding to improve pavement conditions before roadbed deterioration requires full rehabilitation would result in substantial maintenance savings to the Region. Preliminary analysis indicates that the benefits of an investment in proper ongoing maintenance would pay dividends of more than triple the cost. The funding estimates for this RTP and SCS call for \$293 million in investments for rehabilitation and safety projects.
- *Projected Operation and Maintenance Costs* - There are currently an estimated 2,157 lane miles of streets and highways in the Madera County region, including 1,600 lanes miles on the regionally significant road network. By 2040, the lanes miles will increase to 1,952 miles.

Mass Transportation

Mass transportation is a transportation mode that moves large numbers of people from one destination to another. It provides an economical means of travel that reduces single-occupancy vehicle trips, improves air quality, and enhances the overall quality of life. Mass transportation in Madera County consists of public transit services provided by both the public and private sectors and Amtrak passenger rail service. Amtrak rail improvements are coordinated by Madera County. The Cities of Madera and Chowchilla and Madera County provide a total of seven different public transit services—three fixed-route and four demand-responsive.

✓ *Mass Transportation Needs and Actions*

Madera County has made notable progress in addressing many public transit needs throughout the Region. MCTC's "Unmet Transit Needs" process has determined that transit services within the Madera County are meeting the reasonable transit needs of the public. These transit systems provide vital transportation services while reducing single-occupancy vehicle trips, improving air quality, and enhancing the overall quality of life for residents throughout the County.

Madera County's projected population growth over the next 26 years, combined with the number of transit-dependent residents, rising fuel costs, and changing demographics and travel patterns, undoubtedly will impact the demand for transit services. While public transit will continue to play an important role in the mobility of those who are dependent on transit as a lifeline service and

increasingly for those residents seeking transportation options, delivery of transit services must be reliable, convenient, and cost-effective.

The RTP and SCS reflects a total of \$238.4 million in planned transit improvements over the 26-year timeframe of the Plan. This is a 121% increase over transit funding shown in the 2011 RTP (\$107.8 million). Of this total, \$61.4 million or 26% of transit expenditures is projected for transit enhancements above and beyond current operating and fleet costs projected through 2040. These cost projections assume implementation of the “Hybrid Scenario,” continuation at a minimum of current levels of transit services for all systems in the County, and initiation of enhanced transit service in core growth areas. These areas are identified through population and household growth derived from the MCTC transportation model.

Aviation

Increased air service demand will continue to occur in Madera County. This projected demand will increase the need for airport improvements. A number of these improvements are identified in the RTP including land acquisition for future improvements, runway and taxiway renovations and extensions, etc. These improvements have been identified to address aviation system needs described in *the Regional Aviation System Plan* prepared by MCTC in June 1994.

Non-Motorized Systems

MCTC recognizes that increased bicycling, walking and equestrian activities can reduce traffic congestion, air and noise pollution and fuel consumption. As a result, these modes effectively contribute to the quality of life in the region. Bicycle travel has emerged as an increasingly popular form of recreation in the region. Commuting to work has also increased in the urbanized areas of Madera County. Bicycles are essentially pollution-free, use no fossil fuels, are quiet, and take up very little space either in operation or in storage. Bicycling is of interest to the individual because it promotes health, is enjoyable and inexpensive, and, in the congestion of the County, bicycling can be the fastest way of getting to work or to any destination, especially during the peak periods.

✓ Non-Motorized System Needs and Actions

The Cities of Chowchilla and Madera and Madera County have prepared bicycle plans and identify the planned routes for bike lanes and paths. The plans stress the importance of making the road system compatible for bicycle and pedestrian transportation. In addition, the State of California has been working to improve and promote on-street bicycle commuting to urban cores and to support bicycle access to transit and passenger rail modes.

The Madera County 2004 Bicycle Transportation Plan addresses the needs of both commuting and recreational cyclists throughout the county, identifies safe and convenient routes to key locations throughout the county, and suggests needed improvements and additions to the bikeway routes and facilities. MCTC staff will focus on the implementation program of the plan.

✓ **Bicycle and Trail Improvements**

To enable the vision of non-motorized linkages to activity centers within the region, the local agencies have requested approximately \$36.2 million for non-motorized projects in the 2014 RTP and SCS, representing a 70% increase in funding for non-motorized improvement projects from the 2011 RTP.

✓ **Pedestrian Improvements**

There are several strategies that will serve to improve conditions for existing pedestrians and to induce others to join them. In general, all new roadway projects and all reconstruction projects should be constructed so as to provide increased safety and mobility for all users, including people who walk and bicycle. In addition, local agencies have identified general streetscape projects within their jurisdictions to promote walkability within activity centers; especially in downtown areas and along major corridors. These and other projects that will reduce greenhouse gas (GHG) emissions may be funded through the SCS Funding Program.

Goods Movement

Goods movement in Madera County is primarily made along the network of highways and railroads. After many years of decline due to increased competition from trucks, rail freight is reasserting itself as an important component of the transportation system. While cartage by truck will remain an important component of a competitive and multimodal freight network, an efficient, high capacity freight rail system is also essential to ensure the seamless movement of goods between Madera County and markets and manufacturers in the north, south and east. While local freight distribution within the San Joaquin Valley, including Madera County, will continue to be handled mostly by trucks, railroads will serve some industries along the railroad lines. Improvements made to rail rights-of-way, generally for passenger travel, should also help the freight railroads by allowing faster, smoother travel.

✓ **Goods Movement Needs and Actions**

Development of a modern, efficient goods movement system for the region is a cooperative venture, including all of the freight modal providers, airport operators, the federal, State, and local governments, and many other parties. Air cargo operations at the Chowchilla and Madera Municipal Airports are desirable. According to *the Regional Aviation System Plan* for Madera County prepared by MCTC in June 1994, most of the products from agribusiness are transported by truck or by train.

✓ **Grade Separation Improvements**

Regional rail freight movements often conflict with highway commuter and goods movement traffic. With the anticipated increase in truck and train movements, substantial additional delay for passenger vehicles and trucks can be expected at grade crossings. To avoid these delays, grade separations carrying arterials under or over rail lines carrying substantial amounts of freight is recommended along critical routes such as SR 99 near SR 152. In order to support rail/highway grade crossing conflicts, MCTC intends to support the local agencies' in obtaining funds for grade crossing studies, support the construction of grade separations where streets and highways cross regional rail lines, and recognize the need for additional funding for grade crossing improvement projects to relieve

truck and other highway congestion because current program funding needs exceed available public and private funding.

Transportation Demand Management

Transportation demand management (TDM) is the all-inclusive term given to a variety of measures used to improve the efficiency of the existing transportation system by managing travel demand. Approximately \$56.8 million has been allocated toward TDM improvement projects. Travel behavior may be influenced by mode, reliability, frequency, route, time, and costs, support programs/facilities and education. TDM strategies encourage the use of alternatives to the single occupant vehicle such as carpools, vanpools, bus, rail, bikes, and walking. Alternative work hour programs such as compressed work week programs, flextime, and telecommuting (teleworking) are also TDM strategies as are parking management tactics such as preferential parking for carpools and parking pricing; as well as other strategies to improve traffic flow.

Intelligent Transportation Systems

In addition to traditional lane widening and signal system improvements, the need to further enhance the capacity of the existing and future system using Intelligent Transportation System (ITS) will be important. ITS represents a means of applying new technological breakthroughs in detection, communications, computing and control technologies to improve safety and performance of the surface transportation system. This can be done by using the technologies to manage the transportation system to respond to changing operating conditions, congestion or accidents. ITS technology can be applied to arterials, freeways, transit, trucks and private vehicles.

✓ *Intelligent Transportation Systems Needs and Actions*

The *San Joaquin Valley Strategic Deployment Plan*, a collaborative effort between the eight Valley counties and Caltrans, was completed in 2001. The plan includes specific strategies and implementation program for ITS applications in Madera County. MCTC continues to participate in the deployment of 511 traveler information technology in the San Joaquin Valley.

Land Use and Transportation Planning Coordination

Madera County participated with Caltrans, Fresno County, the Cities of Fresno and Clovis, and various stakeholder groups in Phase III of the San Joaquin Valley Growth Response Study. Phase III of the Study focused on development of a land use allocation model and a visualization/indicator model for use with the current transportation demand models. These modeling tools will assist the cities of Fresno and Clovis and the counties of Fresno and Madera in reviewing the urban landscape, considering alternative growth scenarios, and making policy changes to successfully implement their planning documents. The tools will provide information on the land use patterns that could enhance transit, reduce vehicle miles traveled, and address air quality issues.

The Sustainable Communities Strategy

The MCTC 2014 RTP and SCS details how the region will reduce greenhouse gas (GHG) emissions to state-mandated levels over time. The inclusion of the SCS is required by Senate Bill 375, and stresses the importance of meeting GHG per capita emission reduction targets set by the California Air Resources Board (CARB). MCTC has approached development of the SCS as an “opportunity” to enhance the integration of transportation, land use and the environment in the Madera region.

Chapter 6 of the RTP and SCS outlines the approach to develop the Sustainable Communities Strategy (SCS). This is the first time that this chapter has been included in the RTP and is provided in response to SB 375 requirements. SB 375 requires that MCTC incorporate the SCS into the RTP. The SCS:

- ✓ Is intended to show how integrated land use and transportation planning can lead to lower GHG emissions from autos and light trucks
- ✓ Resulted in increased transit use and mode share, all of which have led to both mobility and air quality improvements
- ✓ Encourages changes to the urban form that improve accessibility to transit, and create more compact development, thereby yielding a number of transportation benefits to the region. These include reductions in:
 - Travel time
 - Vehicle miles traveled (VMT)
 - Vehicle hours traveled (VHT)
 - Vehicle hours of delay

SB 375 was passed by the California Legislature, signed by the Governor, and became law effective September 30, 2008. The legislation requires regions within California to work together to reduce GHG emissions from cars and light trucks. SB 375 requires the integration of transportation, land use, and housing planning with the next updates of the RTPs and (RHNA)s. The goal of the SCS is to plan for more sustainable communities that will result in transportation modes that reduce the use of single occupant vehicles. Transportation strategies contained in the RTP including Transportation System Management, Transportation Control Measures and multi-modal transportation system improvements, are major components of the SCS, along with the preferred land use scenario. Transportation and land use integrated together results in less vehicle trip making, especially resulting from increased density, mixed-use, and land use intensity.

Madera County GHG Targets

In 2011, the CARB issued a 5% reduction target to each of the eight (8) Metropolitan Planning Organizations (MPOs) in the San Joaquin Valley including MCTC. CARB agreed that the targets would be applicable to each MPO independently of other Valley MPOs. The targets included a percentage reduction of greenhouse gas emissions from 2005 of 5% by the year 2020 and a reduction in GHG emissions of 10%

by the year 2035. Developing the SCS requires meaningful collaboration with each of the local agencies, as well as stakeholders to identify land use and transportation planning opportunities around the region that will address the needs of the growing population and ensure compliance with State and Federal requirements.

Alternative SCS Scenarios

MCTC began with the land use modeling process developed under the Blueprint process using UPLAN. MCTC had developed several land use scenarios (*Status Quo, Low Change, Moderate Change, and Major Change*), which were modeled and presented to the local agencies, stakeholders and the public. The result of this effort was the selection of the preferred *Low Change* Blueprint scenario. Since the Blueprint process is now a familiar concept within the county, MCTC decided to use the Blueprint scenarios as the basis for the 2014 RTP SCS scenario development process.

Using the Blueprint as the foundation for the alternative SCS scenarios, MCTC coordinated with the cities and the County, as well as stakeholders and the general public to develop a realistic and implementable RTP and SCS. The first steps were to form the Roundtable Committee in November 2012, meet with each of the local agencies, and conduct a series of workshops with stakeholders and the public to identify their priorities for growth and development within the Madera region. This provided a “bottoms-up” approach that led to development of each of the scenarios for further refinement and analysis. Chapter 8 – *“Capturing Public & Stakeholder Input,”* provides a thorough understanding of the RTP and SCS Roundtable and public outreach process undertaken to develop the RTP and the SCS. Based upon the input received, data requirements and inputs for the updated UPLAN software were prepared, utilizing the parcel-based databases from the Blueprint process, as well as the Blueprint scenario definitions.

The Choice Scenario

On March 20, 2014, the RTP and SCS Roundtable reviewed results of the alternative scenario modeling process and agreed that the Hybrid scenario was the preferred SCS scenario. The Roundtable’s recommendation to incorporate the Hybrid Scenario in the 2014 RTP was forwarded to the MCTC Policy Board for its consideration on March 26, 2014. On March 25, 2014, VRPA Technologies, Inc. and MCTC conducted a public visioning workshop to review and discuss the alternative SCS scenarios with the general public and stakeholders. At the March 26, 2014 MCTC Board meeting, the Policy Board reaffirmed the Roundtable’s recommendation and approved the Hybrid scenario as the scenario that should be reflected in the RTP and SCS and implemented to reduce GHG emissions in Madera County.

During review of the Draft 2014 RTP and SCS and Draft Program Environmental Impact Report (EIR), VRPA Technologies, Inc. and MCTC conducted another set of public workshops throughout the Madera region and met with the RTP and SCS Roundtable to receive additional input. Such input was incorporated into the adopted 2014 RTP and SCS and certified 2014 RTP and SCS Final PEIR.

The MCTC Board certified PEIR, FTIP, Conformity Finding, and the 2014 RTP and SCS on July 23, 2014.

Finally, MCTC will conduct a workshop and Roundtable meeting on March 9, 2017 to review amendment to the 2014 RTP/SCS (Amendment #1) and to discuss the upcoming 2018 RTP/SCS. In addition, materials regarding the upcoming workshop and Roundtable meeting have been distributed at various Town Halls conducted by Madera County Supervisors.

The MCTC Board is scheduled to certify the Addendum PEIR for the 2014 RTP/SCS Amendment #1 on May 17, 2017 at a noticed public hearing.

SCS/APS Problem Statement

SB 375 requires MCTC to develop the SCS for the Madera region. If the GHG emissions reduction targets cannot be met through the SCS, an APS may be developed showing how those targets would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. There are two mutually important facets to the SB 375 legislation: reducing VMT and encouraging more compact, complete, and efficient communities for the future.

Following the adoption of the 2014 RTP/SCS, MCTC staff immediately began analyzing what led to GHG emission results achieved during development of the adopted 2014 RTP/SCS. Given the wide gap between emissions results and emissions targets, despite pursuing the most feasibly aggressive SCS strategy proposed, MCTC staff began to analyze the planning tools utilized in the RTP/SCS emissions reporting process; in particular the 2013/14 Madera County Transportation Model.

This analysis concluded the tools used by MCTC for the adopted 2014 RTP/SCS to account for GHG emissions could be enhanced to greatly improve accuracy in the reporting of emission results, particularly for the 2013/14 forecasting model. An extensive effort was undertaken to review the input data used in the transportation model. The bulk of the MCTC staff review focused on how land use and socioeconomic data (SED) was allocated in the model's base year and SB 375 comparison year (2010 and 2005 respectively), the significant roadway network utilized in the model, and the boundaries of traffic analysis zones (TAZs) used to distinguish individual geographic areas in Madera County. With these improvements to the model, the MCTC 2016 model validates better across the wide range of validation metrics that are required per the California RTP Guidelines. Further detail regarding how the transportation model was enhanced is available from MCTC.

Based upon the set of transportation model enhancements and revisions discussed above, GHG reductions for the year 2020 and 2035 have been met (reference Table 6-2).

Financing the Regional System

Chapter 7 of the RTP and SCS identifies current and anticipated revenue and strategies to fund projects described in Chapter 5 – “*Delivering the Plan.*” Primary transportation modes addressed are highways, local streets and roads, public transit, non-motorized bicycle and pedestrian, and rail projects.

The main focus of this financial analysis is to forecast the County’s transportation system capital, operating, maintenance and rehabilitation needs and costs relative to reasonably available forecasted revenue and to optimize transportation investments in Madera County. This effort ultimately reveals the magnitude of transportation network needs and projected funding gap that must be bridged or backfilled to address identified needs. The overall economic outlook will be a major determinant in the availability of funding over the planning horizon.

The RTP and SCS is required to be “financially constrained” reflecting those projects that can be realistically funded based on projected revenue and funding opportunities. Projects identified as needed but for which no funds have been identified are also included as unconstrained projects and would receive priority should funding become available. Challenges posed by this plan become evident as the cost of identified transportation needs in all modes exceeds projected funding.

Projected Revenues and Expenditures

A projection of reasonably available revenue is required to determine how many proposed projects can be fully funded through 2040. The Financial Element reflects traditional or historical growth trends in transportation funds available from a variety of federal, State, and local sources. Consistently reliable sources of funding, such as the excise gas tax, however, may become less stable as fuel sales decline and transportation costs rise. The continuation of Measure T and the collection of projected County-wide impact assessment fees are assumed. The loss of these large revenue sources would significantly impact the ability of the County to deliver projects.

It is acceptable practice to identify funding sources that reasonably expected to be valuable during the planning period. Measure T is the second transportation sales tax measure passed in Madera County that provides ½ percent sales tax proceeds for transportation projects and programs. It is therefore expected that Measure T will be renewed by or prior to the year 2026. Financial assumptions are always based on uncertainty and the federal and state funding sources used to develop the financial constrained revenue projections are all also based on assumptions that Congress and the State of California will continue to appropriate funds. When funding sources or programs are eliminated, or when Congress passes new transportation reauthorization legislation the RTP is updated to reflect those changes.

Table 1-1 below shows the cumulative available transportation revenue in constant dollars for all modes and Table 1-2 shows how the revenue has been allocated to each of the modes.

TABLE 1-1
Revenues by Mode
2014 – 2040 (\$ Million)

Mode	Total	Percent
Streets & Roads	\$1,052.8	76 %
Public Transit	\$238.43	17 %
Non-Motorized	\$36.20	3 %
Other*	\$56.81	4 %
Total	\$1,384.23	100%

* “Other” includes no and low-emission vehicle projects; electric charging stations; traffic signals; and various transportation control measures/transportation systems management projects, etc.

TABLE 1-2
Expenditure Summary by Mode
2014 – 2040 (\$ Million)

Mode	Total	Percent
Streets & Roads – Rehab & Safety	\$298.0	22%
Streets & Roads – Capacity Increasing	\$754.8	54%
Subtotal: Streets & Roads	\$1,052.8	
Public Transit	\$238.4	17%
Non-Motorized	\$36.2	3%
Other*	\$56.8	4%
Total	\$1,384.2	100%

* “Other” includes no and low-emission vehicle projects; electric charging stations; traffic signals; and various transportation control measures/transportation systems management projects, etc.

Environmental Compliance

As mandated by State law, a Program Environmental Impact report (PEIR) has been prepared pursuant to Section 15163 of the California Environmental Quality Act (CEQA). The intent of the PEIR is to serve as CEQA compliance for the MCTC Regional Transportation Plan and Sustainable Communities Strategy (RTP and SCS) and identifies:

- ✓ Significant effects of the updated 2014 RTP and SCS on the environment and indicate the manner in which those significant effects can be mitigated or avoided
- ✓ Unavoidable adverse impacts that cannot be mitigated
- ✓ Project alternatives

The PEIR is an informational document, the purpose of which is to inform public agency decision-makers and the general public of the significant environmental effects (both beneficial and adverse) of the proposed 2014 RTP and SCS.

The MCTC Policy Board certified the 2014 RTP/SCS PEIR and approved the 2014 RTP/SCS on July 24, 2014. The MCTC Board will consider certification of the 2014 RTP/SCS Amendment #1 Addendum PEIR and adoption of the 2014 RTP/SCS Amendment #1 on May 17, 2017.

Public Participation

The RTP and SCS plays a major role in establishing goals and objectives and guide development of infrastructure improvements. Extensive efforts were made to achieve consultation and coordination with all transportation providers, facility operators, appropriate federal, State, and local agencies, Native American Tribal Governments, environmental resource agencies, Environmental Justice Communities, air districts, pedestrian and bicycle representatives, and adjoining MPOs/RTPAs according to the requirements of 23 CFR 450.316 and the 2012 MCTC Public Participation Plan.

The 2014 RTP and SCS public participation program built on the success of previous public outreach campaigns to ensure widespread dissemination of information to a geographically and socially diverse population. Since the last RTP update in 2010, MCTC staff has continued to engage the public through workshops, public meetings, and presentations at service clubs and professional organizations. Educating the public about the regional transportation planning process and opportunities for continued public participation and input remains a priority for MCTC.

Environmental Justice

Chapter 10 of the 2014 RTP and SCS addresses environmental justice provisions and assessment. The equity analysis section mainly assesses whether all racial and income target areas will benefit from fair shares in the transportation investments. However, some transportation projects may create some adverse impacts. Successful transportation projects do not only focus on improvements to the transportation system, but also minimizes and mitigates any negative environmental and social impacts the project may create.

The projects included in the RTP and SCS are intended to alleviate existing congestion and improve the level of service (LOS) for the roadway system. The completion of these proposed projects is likely to help

congestion, thus reducing air pollutant emissions from vehicle idling and constantly accelerating and decelerating. Therefore, the neighborhoods that contain these projects may initially experience some negative impacts in local air quality due to the projects' construction, but in the long run, the local air quality in these areas will benefit from the better traffic flow and less localized pollutant emission.

In addition to the roadway projects, the transit and bike projects included in the RTP and SCS will also contribute to the improvement of air quality. The City and County of Madera has also been recognized for its efforts to improve air quality through the purchase of low pollutant or natural gas vehicles. Much of the money used for these particular clean air projects comes from federal CMAQ dollars.

The analysis mainly focuses on racial minority, low-income and geographic equity of transportation projects within Madera County. This analysis endeavors to present a reasonably comprehensive investigation on the fairness of the distribution of benefits and detriments of the transportation projects included in this RTP and SCS. Considering all the analyses as a whole, it is sufficient to conclude that the RTP and SCS does meet the environmental justice requirements: ensuring that all residents of Madera County are subject to proportionate benefits and detriments of transportation investment.

Performance Monitoring

As the Regional Transportation Planning Agency (RTPA) for Madera County, MCTC monitors local and other regional transportation plans, projects and programs for consistency with regional plans. This monitoring process is conducted through the following processes:

- ✓ Regional Transportation Improvement Program (RTIP) / Federal Transportation Improvement Program (FTIP)
- ✓ Air Quality Conformity
- ✓ Other Regional Transportation Monitoring such as the Highway Performance Monitoring System (HPMS) and a traffic monitoring report
- ✓ Triennial Performance Audit for Transit
- ✓ Benchmarking using performance-based measures to identify and monitor the performance of the transportation system

Chapter 3 The Madera Region – Past, Present & Future Changes is (replaced with the following Chapter)

3. The Madera Region - Past, Present & Future

Current Population and Employment

Historical demographic trends and projections of both population and employment are essential to development of the RTP. The population estimates and projections that are referenced in Tables 3-1 through 3-4 and Figures 3-1 through 3-3 were identified from U.S. Bureau of the Census, California Department of Finance (DOF), California Employment Development Department (EDD), Central California Futures Institute, or from other data and are consistent with assumptions used in the Madera County Regional Traffic Model.

TABLE 3-1

Madera County Historical Population Growth: Years 1930 - 2010

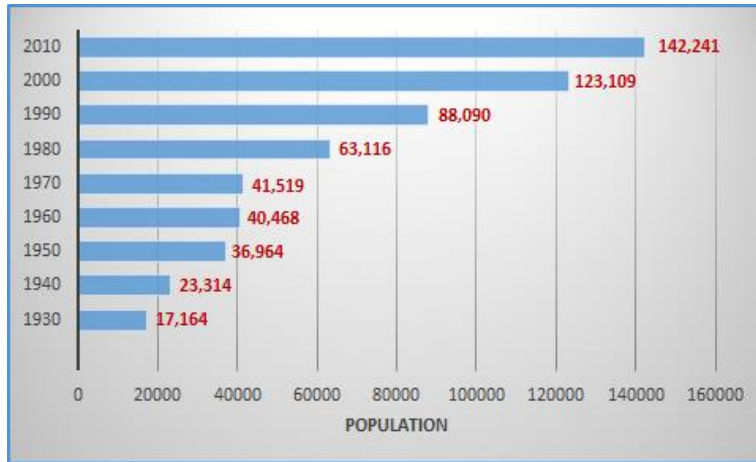
YEAR	POPULATION	% INCREASE	AVERAGE ANNUAL INCREASE
1930	17,164		
1940	23,314	35.8	3.1
1950	36,964	58.5	4.7
1960	40,468	9.5	0.9
1970	41,519	2.6	0.2
1980	63,116	52	4.3
1990	88,090	39.6	3.4
2000	123,109	39.8	4
2010	142,241	15.5	1.55

Source: U.S. 2010 Census

2010 Population excludes group quarters population

FIGURE 3-1

Madera County Historical Population Growth: Years 1930 - 2010



Source: U.S. 2010 Census
 2010 Population excludes group quarters population

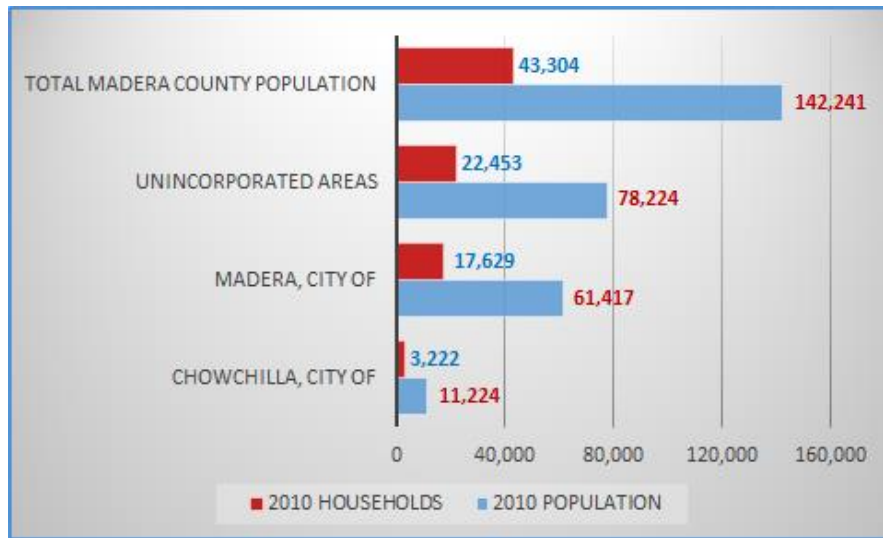
TABLE 3-2

January 1, 2010 Population & Households

AREA OF MADERA COUNTY	2010 POPULATION	2010 HOUSEHOLDS
Chowchilla, City of	11,224	3,222
Madera, City of	61,417	17,629
Unincorporated areas	78,224	22,453
Total Madera County Population	142,241	43,304

Source: U.S. 2010 Census
 2010 Population excludes group quarters population

FIGURE 3-2
January 1, 2010 Population & Households



Source: U.S. 2010 Census
2010 Population excludes group quarters population

Based on data from the U.S. Economic Census, the California DOF, the California EDD, and input from MCTC and Madera County staff, Table 3-3 and Figure 3-3 provide information on employment by major industrial category.

Other Current Socioeconomic Factors

In addition to population, households, and employment, it is important to understand the other socioeconomic factors that help identify the uniqueness of Madera County including household median income, age characteristics, and ethnicity. According to the 2010 U.S. Census:

- ✓ The median household income in 2010 was \$47,937, which was relatively similar to other Central Valley counties
- ✓ 48.6% of the population in Madera County was male and 51.4% was female
- ✓ 34.1% was under the age of eighteen
- ✓ 53.4% were between the ages of twenty and 65
- ✓ 12.2% of the population was 65 years of age or older
- ✓ 86.4% of the population was white
- ✓ 55.2% was Hispanic
- ✓ 4.1% was African-American
- ✓ 4.6% was American Indian, Eskimo, or Aleut
- ✓ 2.5% was Asian or Pacific Islander

TABLE 3-3
Employment and Madera County Residents
By Industry Category – 2010

TOTAL EMPLOYMENT	43,547	% OF TOTAL EMPLOYMENT
Total Farm	10,480	24.1%
Total Nonfarm	33,067	75.9%
Mining, Logging, and Construction	1,119	2.6%
Manufacturing	2,849	6.5%
Trade, Transportation, and Utilities	4,986	11.4%
Wholesale Trade	712	1.6%
Retail Trade	3,459	7.9%
Transportation, Warehousing, and Utilities	814	1.9%
Information	407	0.9%
Financial Activities	712	1.6%
Professional and Business Services	2,747	6.3%
Educational Services (Private), Health Care, and Social Assistance	6,003	13.8%
Health Care and Social Assistance	5,698	13.1%
Leisure and Hospitality	2,645	6.1%
Other Services (excludes 814-Private Household Workers)	814	1.9%
Government	10,785	24.8%
Federal Government (D)	407	0.9%
State and Local Government	10,480	24.1%
State Government	2,544	5.8%
Local Government	7,834	18.0%
Local Government Education	4,375	10.0%

Source: U.S. Economic Census, the California DOF, the California EDD, VRPA Technologies, Inc.

Future Population and Employment Projections

Population and employment estimates/projections for Madera County are presented in Table 3-4 and Figure 3-3. These estimates/projections are provided for Years 2010, 2020, 2035 and 2040. The estimates/projections of population, households and employment were allocated to the broad geographic areas presented in the table and further allocated to 473 traffic analysis zones (TAZs) as part of the Madera County Regional Traffic Model process. Socioeconomic conditions for each of these years is important for purposes of establishing the modeling base year or Year 2010, future years 2020 and 2035 or years for which the SCS has been developed to determine the greenhouse gas (GHG) emission reductions, and future year 2040, which is the horizon year for development of the RTP. It should be noted that population projections for the year 2040 between the 2011 RTP and the 2014 RTP have

decreased by approximately 79,000 people. This reduction has significantly reduced level of service (LOS) deficiencies throughout the County.

TABLE 3-4
Madera County Development Projections
2010, 2020, 2035, and 2040

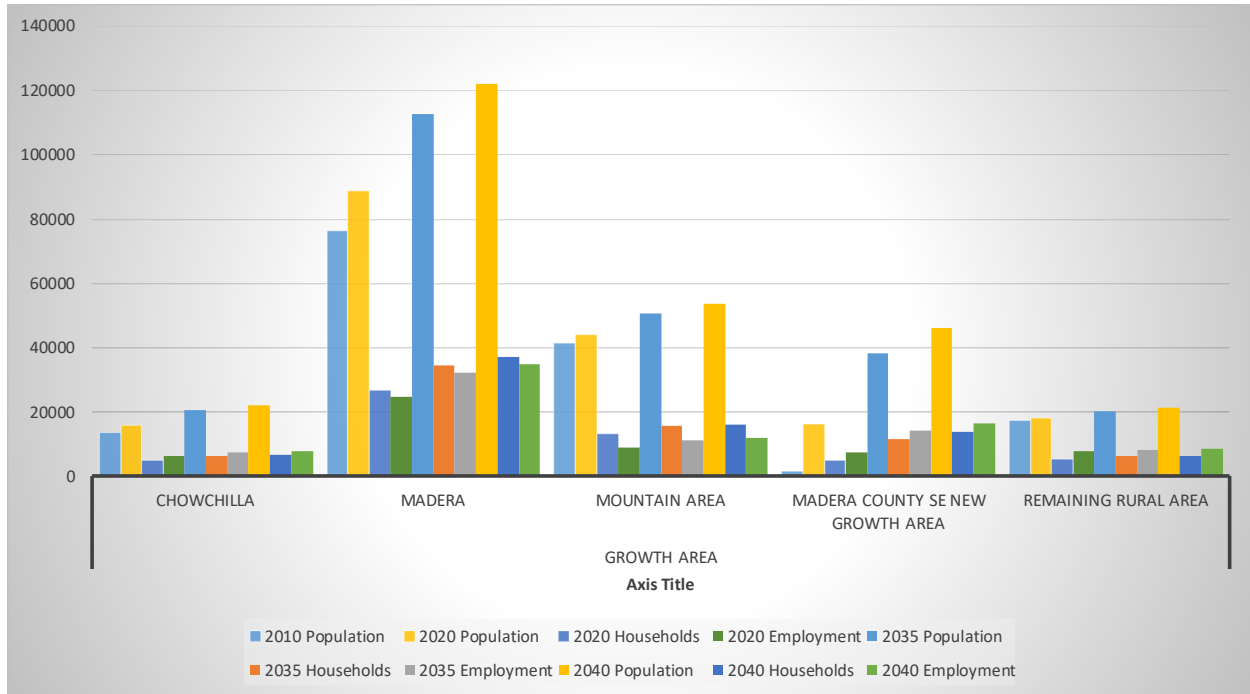
YEAR	SOCIO-ECONOMIC CONDITIONS	GROWTH AREA					Total
		Chowchilla	Madera	Mountain Area	Madera County SE New Growth Area	Remaining Rural Area	
2010	Population	13810	76516	41535	1509	17496	150865
	Households	3964	21963	11922	433	5022	43304
	Employment	5384	20154	7552	2924	7533	43547
2020	Population	16078	88741	43973	16305	18079	183176
	Households	4893	27006	13382	4962	5502	55745
	Employment	6201	24855	8961	7363	7815	55195
2035	Population	20489	112681	50760	38319	20281	242530
	Households	6286	34570	15573	11756	6222	74407
	Employment	7556	32387	11255	14092	8418	73708
2040	Population	22199	121984	53617	46109	21252	265161
	Households	6750	37091	16303	14020	6462	80626
	Employment	8007	34897	12020	16334	8619	79877

Source: MCTC 2016 Transportation Model and VRPA Technologies, Inc.
Includes group quarters population

Based upon the information presented in Tables 3-1, through 3-4, and Figures 3-1 through 3-3, socioeconomic conditions between 2010 and 2040 in Madera County are expected to increase as noted below:

- ✓ Population will increase by 76% or by 114,296 people
- ✓ Households are expected to increase by 76% or by 37,322 households
- ✓ Employment will increase by 83% or by 36,330 jobs

FIGURE 3-3
Madera County Development Projections
2010, 2020, 2035, and 2040



Source: MCTC 2016 Transportation Model and VRPA Technologies, Inc.
Includes group quarters population

Chapter 6 Creating a Sustainable Future Changes (is replaced with the following Chapter)

6. Creating a Sustainable Future

Introduction

The MCTC 2014 RTP and SCS details how the region will reduce greenhouse gas (GHG) emissions to state-mandated levels over time. The inclusion of the SCS is required by Senate Bill 375, and stresses the importance of meeting GHG per capita emission reduction targets set by the California Air Resources Board (CARB). MCTC has approached development of the SCS as an “opportunity” to enhance the integration of transportation, land use and the environment in the Madera region.

This chapter of the RTP and SCS outlines the approach to develop the Sustainable Communities Strategy (SCS). Sections included in this chapter include the following:

- ✓ What the SCS is and how the targets were established – *SCS Requirements*
- ✓ Defining the SCS scenarios for evaluation – *Alternative SCS Scenarios*, including:
 - Identifying the base data utilized to build each alternative scenario
 - The methodology applied to interpret the base data as inputs for the UPLAN land use allocation modeling process
 - The process applied to develop the alternative scenario transportation multi-modal systems or networks using CUBE traffic modeling software
 - Scenario performance measure and greenhouse gas (GHG) target results
- ✓ An overview of why Madera County is different than other Valley Counties and why the targets could not be met – *SCS/Alternative Planning Strategy (APS) Problem Statement*
- ✓ The impact of the 2014 RTP and SCS on natural resources and agriculture – *Preserving Our Resources*
- ✓ The stakeholder and public review and input process undertaken to develop and select the alternative and preferred SCS scenarios – *Capturing Public & Stakeholder Input*

- ✓ Identification of the preferred SCS scenario by the MCTC 2014 RTP and SCS Roundtable and the MCTC Policy Board – *The Choice Scenario*
- ✓ Consideration of the Madera County Regional Housing Needs Assessment (RHNA) – *RHNA Consistency*
- ✓ Consistency with the Madera County Local Agency Formation Commission (LAFCO) policies – *Consistency with LAFCO Policies*
- ✓ Consideration of social equity during the SCS development process – *Social Equity Considerations*
- ✓ How the public health will be improved as a result of the SCS development process – *Public Health Benefits*
- ✓ Senate Bill (SB) 375 (Steinberg) California Environmental Quality Act (CEQA) streamlining allowances and how they will be applied – *CEQA Streamlining*
- ✓ A review of the next steps in the RTP and SCS implementation and monitoring process – *RTP and SCS Implementation and Monitoring Program*

SCS Requirements

Background

This is the first time that this chapter has been included in the RTP and is provided in response to SB 375 requirements. SB 375 requires that MCTC incorporate the SCS into the RTP. The SCS:

- ✓ Is intended to show how integrated land use and transportation planning can lead to lower GHG emissions from autos and light trucks
- ✓ Resulted in increased transit use and mode share, all of which have led to both mobility and air quality improvements
- ✓ Encourages changes to the urban form that improve accessibility to transit, and create more compact development, thereby yielding a number of transportation benefits to the region. These include reductions in:
 - Travel time
 - Vehicle miles traveled (VMT)
 - Vehicle hours traveled (VHT)
 - Vehicle hours of delay

SB 375 was passed by the California Legislature, signed by the Governor, and became law effective September 30, 2008. The legislation requires regions within California to work together to reduce GHG emissions from cars and light trucks.

SB 375 requires the integration of transportation, land use, and housing planning with the next updates of the RTPs and (RHNA)s. The goal of the SCS is to plan for more sustainable communities that will result in transportation modes that reduce the use of single occupant vehicles. Transportation strategies contained in the RTP including Transportation System Management, Transportation Control Measures and multi-modal transportation system improvements, are major components of the SCS, along with the preferred land use scenario. Transportation and land use integrated together results in less vehicle trip making, especially resulting from increased density, mixed-use, and land use intensity.

SB 375 requires the California Air Resources Board (CARB) to develop regional reduction targets for automobiles and light trucks GHG emissions. Using the targets, each region in California is required to develop its SCS by integrating transportation and land use policies and programs that meet the emissions reduction target, if feasible. Key components of SB 375 are the incentives it allows for local governments in the way of regulatory and other incentives that help encourage more compact new development and transportation mode alternatives. In order to achieve the greenhouse gas reduction goals set out in California Assembly Bill 32: *The Global Warming Solutions Act of 2006* (AB 32), SB 375 focuses on reducing VMT and urban sprawl. AB 32 was the nation’s first law to limit greenhouse gas emissions and SB 375 was enacted thereafter to more specifically address the transportation and land use components of greenhouse gas emissions. Through the implementation of regional SCS plans by 2020, the goal of SB 375 is to see a significant decrease in greenhouse gas emissions for the environment and an increase in quality of life for residents.

Referencing California Government Code Section 65080(b)(2)(B)(vii), SB 375 requires that the SCS “sets forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the greenhouse gas emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the greenhouse gas emission reduction targets approved by the state Air Resources Board.” Based upon the legislation, the SCS must:

- ✓ Identify existing and future land use patterns
- ✓ Identify transportation needs and the planned transportation network
- ✓ Consider statutory housing goals and objectives
- ✓ Identify areas to accommodate short- and long-term housing needs
- ✓ Consider resource and farmland areas

In addition to the new requirements listed above, preparation of the RTP is the same as it has been in previous updates and must include:

- ✓ A long-range growth forecast of at least 20 years
- ✓ Estimate where growth and development will realistically occur consistent with market demand within the region
- ✓ Develop a list of multi-modal transportation improvements considering projected revenues
- ✓ Address federal Clean Air Act requirements resulting from the air quality conformity analysis of the list of improvement projects

SB 375 does not require that MCTC dictate land use patterns and policies at the local level. The SCS is only intended to provide a regional policy foundation that local governments may build upon as they choose. This includes quantitative growth projections for each city and for Madera County. The major difference between this RTP update and previous updates is the inclusion of the SCS and the goal of reducing GHG emissions from cars and light trucks. In addition to the SCS objectives, the State is also reducing GHG emissions from these sources through two other laws including an increase in vehicle fuel efficiency and an increase in the use of alternative, lower carbon transportation fuels.

The SCS only shows how future growth and development could be allocated to planned growth areas consistent with the general plans of the cities and the County of Madera. As growth and development occurs, it will be the cities and the County that review and approve development proposals and determine consistency with their plans, programs, and policies; not MCTC. MCTC has no land use authority to approve future growth development as it occurs over the life of the RTP (Year 2040).

Madera County GHG Targets

In 2011, the CARB issued a 5% reduction target to each of the eight (8) Metropolitan Planning Organizations (MPOs) in the San Joaquin Valley including MCTC. CARB agreed that the targets would be applicable to each MPO independently of other Valley MPOs. The targets included a percentage reduction of greenhouse gas emissions from 2005 of 5% by the year 2020 and a reduction in GHG emissions of 10% by the year 2035. Developing the SCS requires meaningful collaboration with each of the local agencies, as well as stakeholders to identify land use and transportation planning opportunities around the region that will address the needs of the growing population and ensure compliance with State and Federal requirements.

Alternative SCS Scenarios

MCTC began with the land use modeling process developed under the Blueprint process using UPLAN. MCTC had developed several land use scenarios (*Status Quo, Low Change, Moderate Change, and Major*

Change), which were modeled and presented to the local agencies, stakeholders and the public. The result of this effort was the selection of the preferred *Low Change* Blueprint scenario. Since the Blueprint process is now a familiar concept within the county, MCTC decided to use the Blueprint scenarios as the basis for the 2014 RTP SCS scenario development process.

Using the Blueprint as the foundation for the alternative SCS scenarios, MCTC coordinated with the cities and the County, as well as stakeholders and the general public to develop a realistic and implementable RTP and SCS. The first steps were to form the Roundtable Committee in November 2012, meet with each of the local agencies, and conduct a series of workshops with stakeholders and the public to identify their priorities for growth and development within the Madera region. This provided a “bottoms-up” approach that led to development of each of the scenarios for further refinement and analysis. Chapter 8 – “*Public Involvement for Change*,” provides a thorough understanding of the RTP and SCS Roundtable and public outreach process undertaken to develop the RTP and the SCS. Based upon the input received, data requirements and inputs for the updated UPLAN software were prepared, utilizing the parcel-based databases from the Blueprint process, as well as the Blueprint scenario definitions.

Blueprint Background Data

For the Blueprint process, extensive spatial datasets were developed and created using existing development information from the Madera County Assessor’s rolls at the parcel level; generalizing and standardizing all land use policy information for jurisdictions within the county; and other physical and environmental constraints. The processing of the datasets resulted in the creation of new data that identified land available for development under the different Blueprint Scenarios. The Blueprint Study developed four scenarios that were modeled for future growth until the horizon year of 2050. The scenarios were defined as *Status Quo*, *Low Change*, *Moderate Change*, and *Major Change*. Table 6-1 outlines the parameters that define the Blueprint scenarios, highlighting the demographic shares, land use intensities, and spatial location preferences.

Developing the SCS Scenarios

The basic land use and transportation modeling steps undertaken to develop the alternative SCS scenarios included the following:

- ✓ **Step 1** - Determine Base Year 2005 GHG Emissions
- ✓ **Step 2** – Calibrated/Validated Traffic Model - Base Year 2010
- ✓ **Step 3** – Growth Forecast (Base Year 2010 & Future Year (2020, 2035, and 2040) Traffic Analysis Zones (TAZ) Socioeconomic Data
- ✓ **Step 4** - UPLAN Growth (Year 2010 – 2040) Allocation Modeling for 3 Alternative Scenarios
- ✓ **Step 5** - Add Scenario Growth to 2010 Base Year and create TAZ Datasets for each Scenario

TABLE 6-1
Parameters of the Madera Blueprint Scenarios

PARAMETERS		Status Quo	Low Change	Moderate Change	Major Change												
1	Demographic Shift in Housing Share	(82150 HH)	(82150 HH)	(82150 HH)	(82150 HH)												
	Very Low	0.5% (1)	0.5%	0.5%	0.25%												
	Low	11% (1)	11.0%	8.5%	1.0%												
	Medium	75.75% (2)	68.5%	63.5%	62.75%												
	High	12.75% (2)	20.0%	27.5%	30.0%												
2	Change in Lot Sizes																
	Very Low	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	2,178,000sf (50 ac)												
	Low	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	217,800sf (5 ac)												
	Medium	7,000sf (0.16 ac)	5,600sf (.13 ac)	4,700sf (.11 ac)	4,300sf (.1 ac)												
	High	3,500 (0.08 ac)	3,000sf (.07 ac)	2,200sf (.05 ac)	1,700sf (.04 ac)												
3	Persons Per Household	3.284	3.284	3.284	3.284												
	Employees Per Household	1	1	1	1												
4	Demographic Shift in Employment Share	(82150 jobs)	(82150 jobs)	(82150 jobs)	(82150 jobs)												
	Industrial	22%	22%	25%	28%												
	Commercial Low	63%	63%	52%	44%												
	Commercial High	7%	7%	15%	20%												
5	Change in Intensities																
	Industrial	0.2 FAR (825 sf/emp)	0.22 FAR	0.25 FAR	0.3 FAR												
	Commercial Low	0.2 FAR (500 sf/emp)	0.25 FAR	0.25 FAR	0.25 FAR												
	Commercial High	0.4 FAR (400 sf/emp)	0.4 FAR	0.45 FAR	0.5 FAR												
6	Spatial Shift in Jobs and Households (1=most attractive, 6= least attractive)	Jobs (priority)	HH (priority)	Jobs (priority)	HH (priority)	Jobs (priority)	HH (priority)	Jobs (priority)	HH (priority)								
		I*	C*	MH*	L*	I	C	MH	L	I	C	MH	L				
		Ahwanee	6	6	6	6	5	4	5	5	5	4	5	5			
		Chowchilla	3	4	3	4	3	3	3	3	2	2	2	2			
		Fairmead	3	4	4	4	3	4	4	4	3	3	3	3			
		Madera City	2	2	2	2	2	2	2	2	1	1	2	2			
		Madera CC	4	3	2	3	2	2	2	2	2	2	2	2			
		North Fork	6	6	6	6	6	4	5	5	6	5	6	6			
		Oakhurst	5	5	5	5	4	4	4	4	4	3	4	4			
		Rio Mesa	1	1	1	1	1	1	1	1	1	1	1	1			
7	Transportation Enhancements	New Freeway Ramps		Regional Transit Network				RTN, BRT routes				RTN, BRT, LRT routes					
				Enhanced Existing Transit				possible BRT on SR 99 & SR 41				Possible BRT on SR 99, SR 41. Transit upto Oakhurst; LRT from Rio Mesa into Fresno					
8	Change in General Plan	No Change. Used old GP for Madera City and Chowchilla				Use new GP for City of Madera and Chowchilla				Use new GP for City of Madera and Chowchilla				Use new GP for City of Madera and Chowchilla			
9	Infill Consideration	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value				Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value				Urban Non Res: <70% of GP FAR & >10 yrs; Improvement Value =< Land Value				Urban Non Res: <80% of GP FAR & >1.25 yrs; Improvement Value =< Land Value			
		Urban Res: Imp Value =< 50% of Land Value & Land Area >1 Acre in Urban Areas				Urban Res: Imp Value =<50% of Land Value & Land Area >1 Acre in Urban Areas				Urban Res: Imp Value =<70% of Land Value & Land Area >0.75 Acre in Urban Areas				Urban Res: Imp Value =<80% of Land Value & Land Area >0.50 Acre in Urban Areas			
	Demand Characterization	Status Quo				Demand for unit types stays the same				Shift to higher density				More shift towards attached Ag/forest & rural are less dense. Attached and detached are more dense			
		Status Quo				Lot size decreases				Lot size decreases							

* I = Industrial
C = Commercial
MH = Medium & High Density Residential
L = Low Density Residential

- ✓ **Step 6** - Run Scenario Datasets using the Traffic Model for Years 2020, 2035, and 2040
- ✓ **Step 7** - Using EMFAC (Emission FACTors Model)– Determine GHG Emissions for each Scenario for Years 2020 and 2035
- ✓ **Step 8** – Compare GHG Results to 2005 Base Year GHG Emissions and determine if results meet the GHG Emission Reduction Targets from 2005 Base Year of 5% by 2020 and 10% by 2035

Each of these steps in the modeling process are further described below.

Step 1 - Base Year Emissions

The Base Year 2005 GHG emissions were estimated using the current 2016 Transportation Model. Base Year annual GHG (CO₂) emissions from applicable vehicle categories (cars and light trucks) are estimated by MCTC as 1,193 tons per day. This is the 2005 emission inventory used to determine the percentage reductions associated with each of the alternative scenarios for years 2020 and 2035.

Step 2 - Transportation Model Calibration/Validation

The 2013/14 MCTC Transportation Model was initially calibrated and validated for the year 2010 in December 2013. When initial modeling results indicated that the 2014 RTP and SCS would NOT meet the established emission reduction targets, MCTC staff immediately began analyzing what led to these anomalous results, despite Madera County and its cities proposing the most feasible aggressive SCS strategy deemed feasible.

This analysis concluded the tools used by MCTC for the RTP/SCS to account for GHG emissions could be enhanced to greatly improve accuracy in the reporting of emission results, particularly the 2013/13 MCTC Transportation Model.

An extensive effort was undertaken to review the input data used in the transportation model. The bulk of the MCTC staff review focused on how land use and socioeconomic data (SED) was allocated in the model's base year and SB 375 comparison year (2010 and 2005 respectively). In addition to checking the SED inputs, MCTC's consultants corrected other technical errors in the previous model runs. With these improvements, the MCTC model indicates that Madera will meet emission-reduction targets. Moreover, the model validates better across the wide range of validation metrics that it is required to meet per the California RTP Guidelines. The result is the enhanced 2016 MTC Transportation Model, utilized to develop the 2014 RTP/SCS Amendment #1.

Following the adoption of the 2014 RTP/SCS, MCTC staff immediately began analyzing what led to GHG emission results achieved during development of the adopted 2014 RTP/SCS. Given the wide gap between emissions results and emissions targets, despite pursuing the most feasibly aggressive SCS strategy proposed, MCTC staff began to analyze the planning tools utilized in the RTP/SCS emissions reporting process; in particular the 2013/14 Madera County Transportation Model.

This analysis concluded the tools used by MCTC for the adopted 2014 RTP/SCS to account for GHG emissions could be enhanced to greatly improve accuracy in the reporting of emission results, particularly for the 2013/14 forecasting model. An extensive effort was undertaken to review the input data used in the transportation model. The bulk of the MCTC staff review focused on how land use and socioeconomic data (SED) was allocated in the model's base year and SB 375 comparison year (2010 and 2005 respectively), the significant roadway network utilized in the model, and the boundaries of traffic analysis zones (TAZs) used to distinguish individual geographic areas in Madera County. With these improvements to the model, the 2016 MCTC model validates better across the wide range of validation metrics that are required per the California RTP Guidelines. Further detail regarding how the transportation model was enhanced is available from MCTC.

✓ Socioeconomic Detail

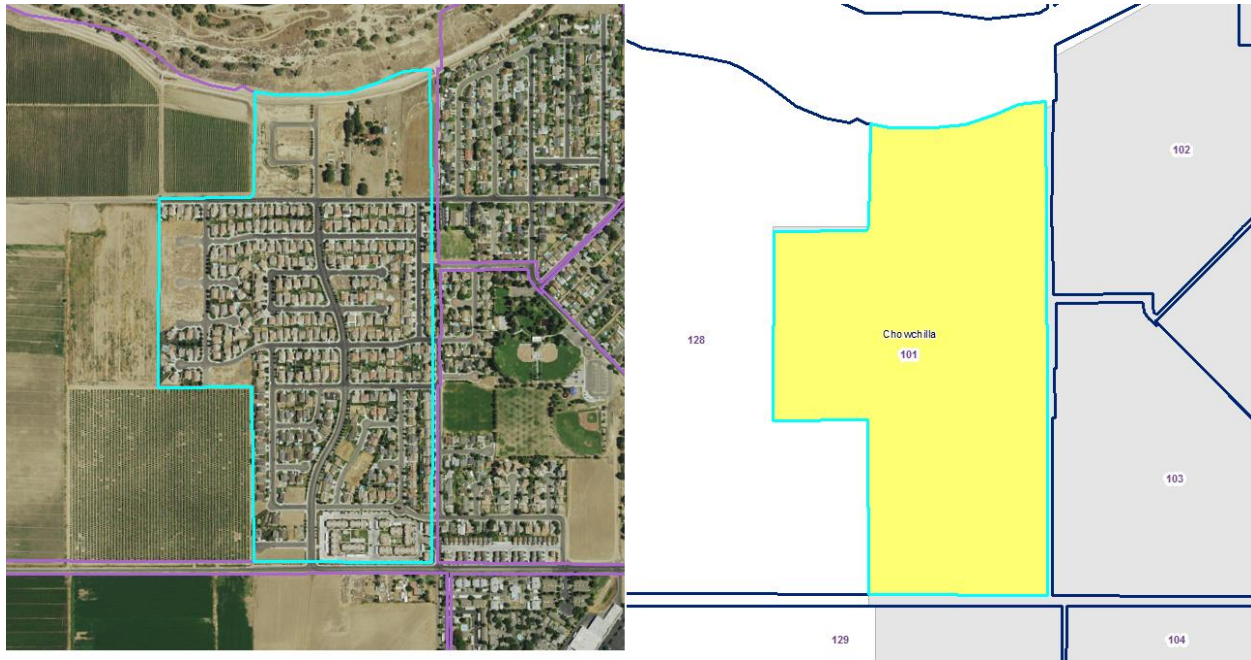
The socioeconomic detail input file for the transportation model contains housing type and employment type data for TAZs covering the entirety of Madera County. Review of SED inputs utilized in the transportation model revealed a distribution of population and employment in Madera County capable of refinement to be more consistent with the true, on ground reality for 2005 and 2010 model years.

▪ *Housing*

Review of SED inputs relating to housing indicated inaccuracies with the types of housing distributed throughout the County. Of particular note was the over population of mobile home dwelling types. Mobile home dwelling types were distributed throughout TAZs in the County despite evidence concluding that no such dwellings existed in the analysis years reviewed. Figure 6-1 displays a TAZ in the City of Chowchilla. Input data assigned 33 mobile home dwellings to this TAZ for the 2005 analysis year. Satellite imagery of this geographic area captured between July 30, 2004 and December 30, 2005 indicate no mobile homes existed between these time ranges. Similar instances of this dwelling type distribution occur in all jurisdictions and unincorporated communities throughout the County and varying degrees accounting for an estimated 2,500 over counting of mobile home type dwelling units.

MCTC staff examined all TAZs with mobile home dwelling types assigned and made corrections where data existed to warrant them. This exercise revealed some instances of mobile home dwelling types being over-distributed while detached single family units were under-distributed in TAZs. Mobile units displaced in this exercise were replaced with single family detached; single family attached or multifamily attached dwelling units indicative of the actual on-ground land use existing in these TAZs in the examined analysis year.

FIGURE 6-1
City of Chowchilla TAZs



- *Employment*

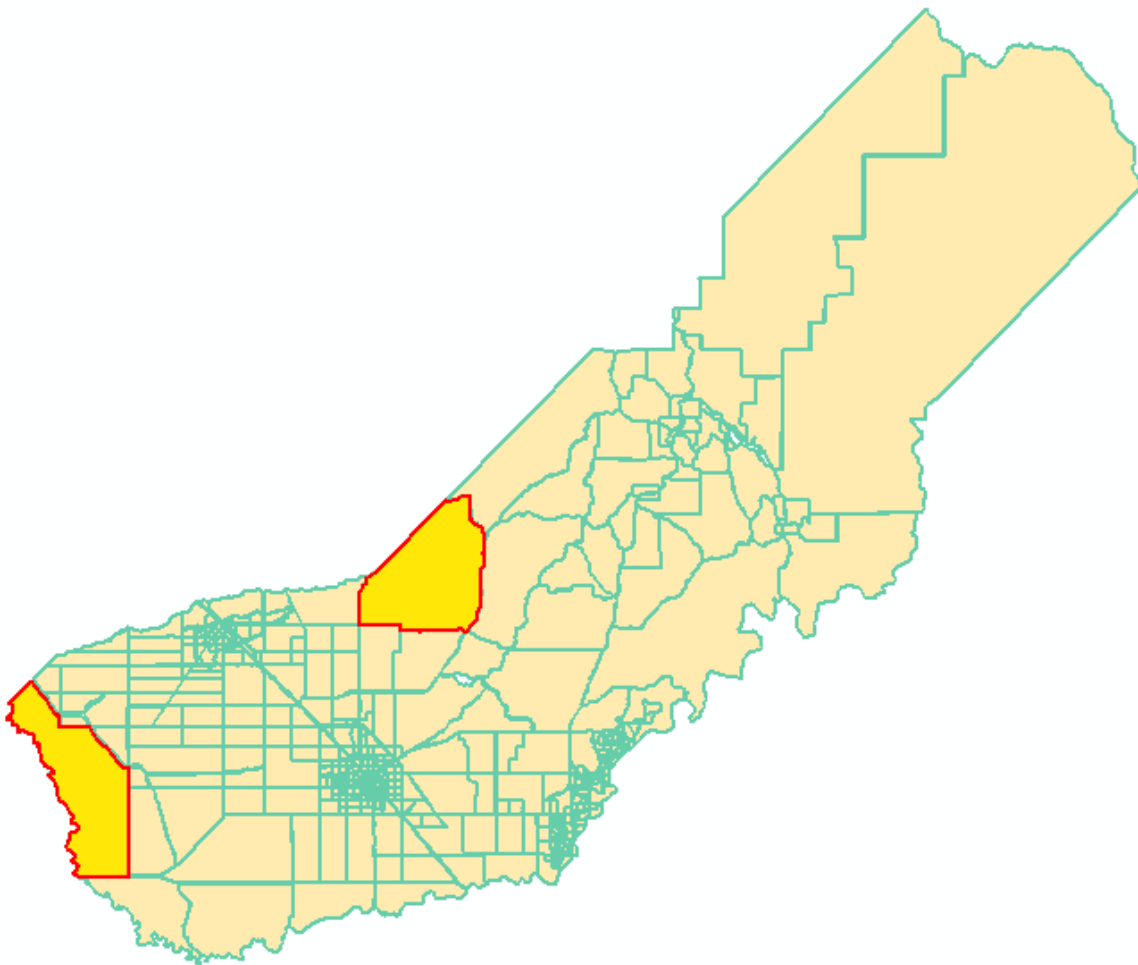
Review of SED inputs relating to employment indicated inaccurate employment levels and distribution at several locations. Most significant was the employment distribution of Agriculture jobs in 2005. Historical data indicates agriculture jobs, though varied in season, are static in quantity. This means throughout the planning window utilized for the 2014 RTP/SCS process, numbers of agricultural jobs should not fluctuate significantly. It was determined over 7,000 agriculture jobs were not counted in 2005. This input was edited to reflect a more realistic count of agriculture jobs in Madera County.

MCTC staff examined Madera County’s largest single site employers. Changes were made to the manner employment was calculated for the prison complex in central Madera County. The employees were recognized to generate trip patterns more like ‘warehouse’ employment types as opposed to ‘government’ employment types. The land use was therefore reclassified to more accurately capture travel behavior as it exists in the context of a prison facility.

- *Outliers*

MCTC staff was able to identify two TAZs during the overall review process containing SED data significantly inconsistent with reality on the ground. Both of these TAZs were consistent with each other in the level of error contained within. Both TAZs were located in unincorporated areas of Madera County not within the immediate vicinity of any Madera County population centers, in areas zoned for agricultural uses, where the primary makeup of jobs and housing would be agricultural employment with a very small quantity of single family detached residential housing (See Figure 6-2). Both TAZs had significantly higher than expected quantities of housing and employment, as well as a large variety of different employment and housing types inconsistent with what actually existed within them.

FIGURE 6-2
County TAZs



✓ Significant Roadway Network

The traffic model does not analyze traffic on every roadway in the County, rather it accounts for travel on the most significant roadways. The roadway network is a line and point map of the significant streets, roads, and highways in Madera County. The lines and points contain specific data related to what facet of the roadway network they depict (facility type, number of lanes, speed limit, signalization at an intersection, etc.).

Upon examination of the significant roadway network, MCTC staff realigned roadway segments in several areas to make the network more closely align the real world geometries currently existing or to add new segments where warranted.

Planned capital improvement projects were checked to ensure the future year significant roadway network was consistent with planned roadway improvements.

✓ Traffic Analysis Zones

TAZs are spatial geographic areas designated to encompass a specific area in the traffic model. The size of a TAZ can range from a single densely packed city block, to a broad area encompassing an unincorporated rural community. Boundaries for TAZs primarily are created from the significant roadway network, and/or geopolitical borders and/or physical environmental features. Each TAZ has a centroid; extending from each TAZ centroid are centroid connectors responsible for distributing traffic onto the significant roadway network. MCTC staff reviewed the boundaries of the TAZs used for the model. Several new TAZs were created during this process.

A standard practice for TAZs in a traffic model is that they should not be intersected by any roadways from the significant roadway network the model uses nor should they be intersected by geographic features such as rivers. Several TAZs were bisected and realigned to adhere to this practice (See Figure 6-3).

MCTC staff created a new TAZ in rural eastern Madera County to capture traffic behavior related to the Chukchansi Tribe casino and hotel, Chukchansi Gold Resort and Casino. The casino and hotel were previously within a TAZ also containing a rural housing development, though neither entity shared any local roads; both are accessed off of a state highway at different locations. The new TAZ encompasses only the casino and hotel facility; one of Madera County's largest employers (See Figure 6-4).

FIGURE 6-3
Realigned TAZs

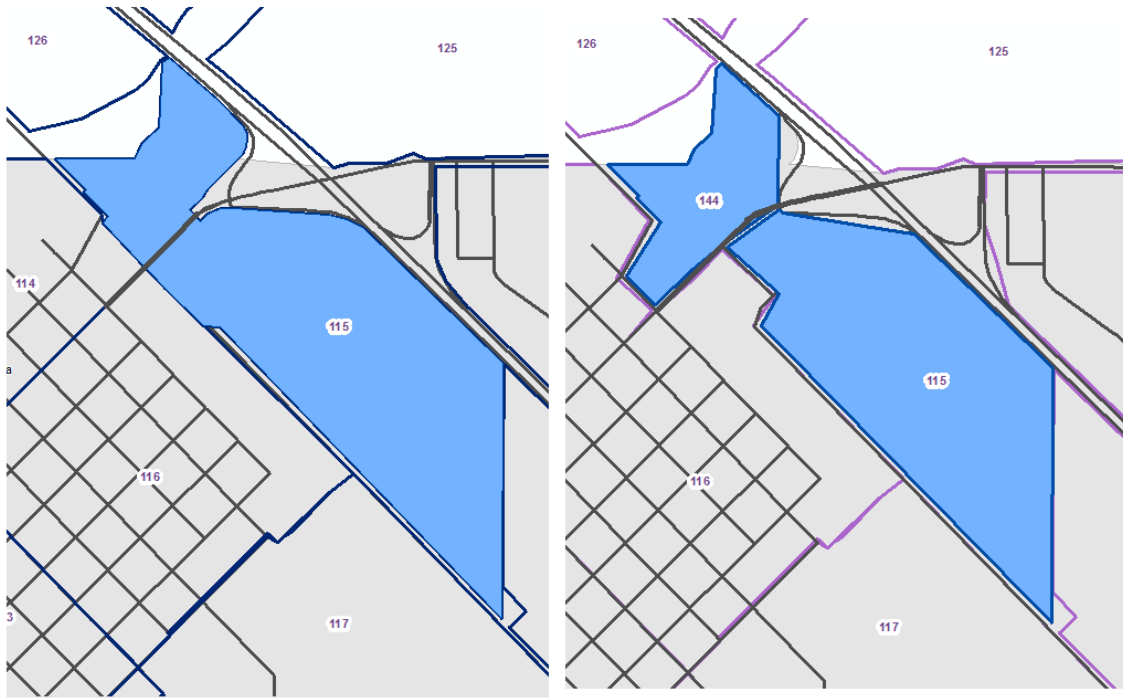


FIGURE 6-4
Chukchansi Casino TAZs



✓ **Transportation Model Review**

Upon conclusion of SED data review and correction by MCTC staff, a SED data land use input file was reviewed by traffic modeling consultants against the latest Census, California Employment Development Department (EDD), Longitudinal Employer-Household Dynamics (LEHD), and American Community Survey (ACS) data at the County and city (Madera and Chowchilla) levels where available. The latest updates to the land use data accurately reflect the demographic, household, and employment data from the different sources.

Inaccuracies related to under-developed housing and employment totals in 2005 were deemed problematic given that 2005 is the year 2020 and 2035 must be measured against for GHG reductions as stipulated by SB 375.

Measured reductions of future GHG emissions as the result of the planning parameters of the selected preferred Madera County 2014 RTP/SCS scenario were not able to be accurately accounted for when juxtaposed against a 2005 model year less developed than what actually did exist in 2005. Improvement to the 2005 comparison year is paramount to accurately convey GHG emission reductions as a result of the 2014 RTP/SCS planning effort for Madera County.

In addition to checking the new inputs, consultants found a few technical errors in the previous model runs. The model gateways (interregional trips) were updated to reflect the revised 2005 and 2010 scenario. The time of day (diurnal) factors were adjusted to add up to 100%. Some traffic counts were excluded from the validation because they were below the threshold for reasonableness for the model to estimate (500 for the daily scenario and 50 for the peak hour), and updated the calculation compared to the model for only roadways that had both counts and model volumes. With these improvements to the model, the MCTC model validates better across the wide range of validation metrics that it is required to meet per the California RTP Guidelines.

A great amount of effort has gone into making sure MCTC possesses the most adequate and accurate planning tools possible for utilization in the 2014 RTP/SCS Amendment #1 development process. The results of this effort have proven beneficial. All changes made to the model have been scrutinized to make sure that nothing implemented is inconsistent with the established and adopted measures prescribed in the preferred SCS scenario.

It should be noted that none of the multimodal improvement projects listed in the adopted 2014 RTP/SCS have been changed as a result of the enhanced modeling efforts described above.

Based upon the set of transportation model enhancements and revisions discussed above, GHG reductions for the year 2020 and 2035 have been met (reference Table 6-2).

TABLE 6-2
2016 Madera County Transportation Model
2020 and 2035 Target Results

Description	Emissions or Target	Met Target?
2005 CO2 Emissions/Capita	17.0	
Target 5% Oer Capita From 2005	0.85	
2020 Target	16.16	
2020 CO2 Emissions/Capita	14.90	
2020 CO2 Reduction Needed (#/Capita)	-1.27	
2020 CO2 Reduction Needed (4 Vehicle Types)	-265816	
Target 10% per Capita From 2005	1.70	
2035 Target	15.31	
2035 CO2 Emissions/Capita	13.00	
2035 CO2 Reduction Needed (#/Capita)	-2.29	
2035 CO2 Reduction Needed (4 Vehicle Types)	-654544.0	
Results		
Change in CO2 Per Capita from 2005 to 2020	-12.5%	YES
Change in CO2 Per Capita from 2005 to 2035	-23.5%	YES

Step 3 – Growth Forecast (Base Year 2010 & Future Year (2020, 2035, and 2040) TAZ Socioeconomic Data
 Development of the 2014 RTP and SCS considers growth and development to the year 2040. Table 6-3 identifies the total population, housing and employment for each of the growth areas for the base year or year 2010 and each of the SCS analysis years including 2020 and 2035, and the RTP horizon year of 2040. Projections were held constant for each of the alternative scenarios analyzed.

TABLE 6-3
Madera County Development Projections
2010, 2020, 2035, and 2040

YEAR	SOCIO-ECONOMIC CONDITIONS	GROWTH AREA					Total
		Chowchilla	Madera	Mountain Area	Madera County SE New Growth Area	Remaining Rural Area	
2010	Population	13810	76516	41535	1509	17496	150865
	Households	3964	21963	11922	433	5022	43304
	Employment	5384	20154	7552	2924	7533	43547
2020	Population	16078	88741	43973	16305	18079	183176
	Households	4893	27006	13382	4962	5502	55745
	Employment	6201	24855	8961	7363	7815	55195
2035	Population	20489	112681	50760	38319	20281	242530
	Households	6286	34570	15573	11756	6222	74407
	Employment	7556	32387	11255	14092	8418	73708
2040	Population	22199	121984	53617	46109	21252	265161
	Households	6750	37091	16303	14020	6462	80626
	Employment	8007	34897	12020	16334	8619	79877

Source: MCTC 2016 Transportation Model and VRPA Technologies, Inc.

Includes group quarters population

Step 4 - UPLAN Growth (Year 2010 – 2040) Allocation Modeling for 3 Alternative Scenarios

Land use patterns that provide for mixed-use or a mixture of goods and services in combination with residential uses have been shown to reduce VMT and thereby reduce GHG. Combining mixed-use development with infill development, rather than building on the urban fringe, results in reduced GHG emissions by reducing the distance that people have to travel to get their basic needs met.

Based upon input from each of the local jurisdictions, the Roundtable Committee, other stakeholders, and the public, three land use and transportation scenarios were developed for the Madera region including the:

- ✓ **Status Quo Scenario** – Which reflects growth consistent with how growth has occurred in the past. This scenario assumes improvements to the transportation network consistent with the 2014 RTP lists of improvement projects that have been reflected in the traffic model. Other improvements include existing and future transit system improvements for each of the three transit providers
- ✓ **Low Change Scenario** – This scenario is reflective of the Blueprint Low Change scenario and applied similar parameters used for the Blueprint land use allocation process (reference Table 6-4). This scenario is also consistent with the 2014 RTP lists of improvement projects that have been reflected in the traffic model. Other improvements include existing and future transit system improvements for each of the three transit providers, as well as enhanced transit services along major corridors

within the region including State Route (SR) 4, SR 99, SR 145, and Avenue 12. Finally, this scenario assumed enhanced densities across all growth areas in the County consistent with the low change parameters reflected in Table 6-4 below.

- ✓ **Hybrid Scenario** - This scenario is reflective of a combination of the Blueprint Low Change and Moderate Change scenarios and applied similar parameters used for the Blueprint effort. Specifically, the Low Change parameters were applied to the City of Chowchilla General Plan Area or Sphere of Influence, as well as the remaining unincorporated area [except within the Southeast Madera County New Growth Area (NGA)]. The Moderate Change parameters were applied as reflected in Table 6-4 to the City of Madera and the NGA. This scenario is also consistent with the 2014 RTP lists of multi-modal improvement projects that have been reflected in the traffic model or in the RTP. Other improvements include existing and future transit system improvements for each of the three transit providers, as well as enhanced transit along major corridors within the region including SR 4, SR 99, SR 145, and Avenue 12. Finally, this scenario assumed enhanced densities across all growth areas in the County and even higher residential densities in the City of Madera and the NGA consistent with the General, Area, and Specific Plans for all jurisdictions.

The Low Change and Hybrid scenarios do reflect smart growth strategies such as increased densities but increased densities alone are not enough to encourage people to switch modes of travel from single occupant vehicles to transit, bicycling or walking. For this reason, MCTC also reflected transportation infrastructure improvements in each of the scenarios to make alternative modes more attractive by assuming that increased density, infill development and mixed-use development will be located along existing and future multi-modal corridors.

By reflecting increased density and accessibility to transit along existing and future transit routes and major street/road and highway corridors, there is a greater potential that residents and employees will chose to use transit rather than drive to their destination.

In addition, streets and roads that connect to these corridors and major residential, commercial, service and employment centers have been planned to accommodate complete streets, or streets and roads that accommodate multiple modes including bicycle, pedestrian and transit services. These also result in reduced auto vehicle trips.

TABLE 6-4
2014 RTP and SCS UPlan Land Use Allocation Model Parameters

Parameters	City of Madera			City of Chowchilla		Southeast Madera County New Growth Area			Remaining Madera County Unincorporated Area	
	Status Quo	Low Change	Moderate	Status Quo	Low Change	Status Quo	Low Change	Moderate	Status Quo	Low Change
Demographic Shift in Housing Share	15,233	15,233	15,233	2,784	2,784	13,581	13,581	13,581	5,821	5,821
Very Low	0.0%	0.0%	0.0%	0.25%	0.25%	0.1%	0.1%	0.1%	3.0%	3.0%
Low	1.8%	1.8%	1.0%	6.50%	6.50%	4.2%	4.2%	3.0%	53.0%	53.0%
Medium	82.0%	71.0%	65.0%	80.00%	80.00%	82.0%	74.8%	70.8%	42.0%	42.0%
Medium High	13.0%	20.0%	22.0%	12.50%	12.50%	12.0%	18.2%	20.2%	2.0%	2.0%
High	3.2%	7.2%	12.0%	0.75%	0.75%	1.8%	2.8%	6.0%	0.0%	0.0%
Total:	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Change in Lot Sizes										
Very Low	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)	871,200sf (20 ac)
Low	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)	43,560sf (1 ac)
Medium	7,000sf (0.16 ac)	5,600sf (.13 ac)	6,220sf (0.1428 ac)	7,000sf (0.16 ac)	5,600sf (.13 ac)	7,000sf (0.16 ac)	5,600sf (.13 ac)	4,700sf (.11 ac)	7,000sf (0.16 ac)	5,600sf (.13 ac)
Medium High	3,500 (0.08 ac)	3,000sf (.07 ac)	2,905sf (0.068 ac)	3,500 (0.08 ac)	3,000sf (.07 ac)	3,500 (0.08 ac)	3,000sf (.07 ac)	2,750sf (.063 ac)	3,500 (0.08 ac)	3,000sf (.07 ac)
High	2,200 (0.05 ac)	2,000 sf (0.045)	1,800sf (0.04 ac)	2,200 (0.05 ac)	2,000 sf (0.045)	2,200 (0.05 ac)	2,000 sf (0.045)	1,800sf (.04 ac)	2,200 (0.05 ac)	2,000 sf (0.045)
Persons Per Household	3.284	3.284	3.284	3.284	3.284	3.284	3.284	3.284	3.284	3.284
Employees Per Household	0.86	0.86	0.82	0.85	0.85	0.77	0.77	0.77	0.85	0.85
Demographic Shift in Employment Share	13,085	13,085	13,085	2,353	2,353	10,395	10,395	10,395	4,938	4,938
Industrial	30.0%	30.0%	30.0%	24.00%	24.00%	16.220%	16.220%	18.000%	23.9%	23.9%
Commercial Low	60.0%	60.0%	55.0%	67.80%	67.80%	76.170%	76.170%	72.170%	75.1%	75.1%
Commercial High	10.0%	10.0%	15.0%	8.20%	8.20%	7.610%	7.610%	9.830%	1.0%	1.0%
Total:	100.00%	100.00%	100.00%	100.0%	100.0%	100%	100%	100.000%	100.00%	100.00%
Change in Intensities										
Industrial	0.25 FAR (825 sf/emp)	0.25 FAR (825 sf/emp)	0.25 FAR (825 sf/emp)	0.2 FAR (825 sf/emp)	0.22 FAR (825 sf/emp)	0.2 FAR (825 sf/emp)	0.25 FAR (825 sf/emp)	0.25 FAR (825 sf/emp)	0.2 FAR (825 sf/emp)	0.22 FAR (825 sf/emp)
Commercial Low	0.3 FAR (500 sf/emp)	0.325 FAR (500 sf/emp)	0.325 FAR (500 sf/emp)	0.2 FAR (500 sf/emp)	0.25 FAR (500 sf/emp)	0.2 FAR (500 sf/emp)	0.3 FAR (500 sf/emp)	0.3 FAR (500 sf/emp)	0.2 FAR (500 sf/emp)	0.25 FAR (500 sf/emp)
Commercial High	0.425 FAR (400 sf/emp)	0.45 FAR (400 sf/emp)	0.45 FAR (400 sf/emp)	0.4 FAR (400 sf/emp)	0.4 FAR (400 sf/emp)	0.4 FAR (400 sf/emp)	0.45 FAR (400 sf/emp)	0.45 FAR (400 sf/emp)	0.4 FAR (400 sf/emp)	0.4 FAR (400 sf/emp)
Transportation Enhancements	New Freeway Ramps	Regional Transit Network (RTN)		New Freeway Ramps	Regional Transit Network (RTN)	New Freeway Ramps	Regional Transit Network (RTN)		New Freeway Ramps	Regional Transit Network (RTN)
Change in General Plan	Use new GP for City of Madera and Chowchilla			Use new GP for City of Madera and Chowchilla		Use new GP for City of Madera and Chowchilla			Use new GP for City of Madera and Chowchilla	
Infill Consideration	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value	Urban Non Res: <70% of GP FAR & >10 yrs; Improvement Value =< Land Value	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value	Urban Non Res: <70% of GP FAR & >10 yrs; Improvement Value =< Land Value	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value	Urban Non Res: <50% of GP FAR & >25 yrs; Improvement Value =< Land Value
	Urban Res: Imp Value =< 50% of Land Value & Land Area >1 Acre in Urban Areas	Urban Res: Imp Value =<70% of Land Value & Land Area >0.75 Acre in Urban Areas	Urban Res: Imp Value =< 50% of Land Value & Land Area >1 Acre in Urban Areas	Urban Res: Imp Value =<50% of Land Value & Land Area >1 Acre in Urban Areas	Urban Res: Imp Value =<50% of Land Value & Land Area >1 Acre in Urban Areas	Urban Res: Imp Value =< 50% of Land Value & Land Area >1 Acre in Urban Areas	Urban Res: Imp Value =<70% of Land Value & Land Area >0.75 Acre in Urban Areas	Urban Res: Imp Value =< 50% of Land Value & Land Area >1 Acre in Urban Areas	Urban Res: Imp Value =<50% of Land Value & Land Area >1 Acre in Urban Areas	Urban Res: Imp Value =<50% of Land Value & Land Area >1 Acre in Urban Areas
Demand Characterization	Status Quo	Demand for unit types stays the same	Shift to higher density	Status Quo	Demand for unit types stays the same	Status Quo	Demand for unit types stays the same	Shift to higher density	Status Quo	Demand for unit types stays the same
	Status Quo	Lot size decreases	Lot size closer to General Plan average	Status Quo	Lot size decreases	Status Quo	Lot size decreases	Lot size decreases	Status Quo	Lot size decreases

✓ Updated UPLAN Data Development

Due to updates in demographic projections, General Plans, existing conditions, and the multi-modal transportation network, the different jurisdictions' General Plan land use categories had to be translated into a standardized land use category set to be used by the UPLAN software. Table 6-5 outlines the standard generalized land use definitions developed for the SCS.

✓ Distributing Growth Allocations to Use Categories and Jurisdictions

MCTC coordinated with the local jurisdictions to allocate the projected housing growth to the different jurisdictions. The UPLAN model allows for modeling growth by sub-areas within a county wherein the model will limit growth by the identified allocation for each area. Table 6-3 highlights the distribution for housing and employment for the overall county and each sub-area. The sub-areas are defined as *Madera City Plan Area*, *Chowchilla City Plan Area*, *Southeast Madera County New Growth Area* and *Remainder County* or the remaining unincorporated areas of the County.

The land use definitions and shares for the cities reflect a greater tendency for relatively compact development in comparison to other County areas. The share and land use definitions were modified to develop the *Low* and *Hybrid* scenarios as alternatives to the *Status Quo* Scenario. The *Hybrid Scenario* was modified to match the City of Madera's General Plan desire to have new housing average between six (6) to eight (8) dwelling units per acre for future growth density. The scenario manages to be just above 8 units per acre for new housing growth within the Madera City Plan Area.

During development of this step, all socioeconomic data (SED) related to government, educational, and healthcare employment was subtracted from the TAZs so that this employment would not be "reallocated" during the UPLAN runs for each of the scenarios.

Step 5 - Add Scenario Growth to 2010 Base Year and Create TAZ Datasets for each Scenario

The results of the UPLAN scenario model runs for each of the three SCS scenarios were mapped and processed into the input format for the Cube transportation (traffic) model. This growth was adjusted consistent with the TAZ SED formats required to run the traffic model. UPLAN creates spatial mapping for the growth allocation as well as housing and employment distribution by TAZ. The UPLAN model output must be translated into SED categories typically used by the Cube traffic model. Government, healthcare and education jobs were not modeled through UPLAN, and were added following each UPLAN scenario run by adding the jobs directly to the TAZ dataset as they were allocated in the original TAZ SED dataset.

TABLE 6-5
UPlan General Plan Categories

Residential Allocation Uses			
General Plan Residential Land Use Designations	Density Range (units/acre)	Lots Size Range Gross (Sq.Ft.)	Average Lot Size Gross (Sq.Ft.) *
Very Low Density	<2	> 22,000	75,000
Low Density	2.01-6.5	6,700-22,000	10,750
Medium Density	6.51-12.00	3,600-6,700	5,500
Medium High Density	12.00-15.00	2,900 -3,600	3,200
High Density	>15.00	2,000-2,900	2,400
Mixed Use	>15.00	2,000-2,900	2,400
Employment Allocation Uses			
General Plan Residential Land Use Designations	F.A.R.*	Density Range (jobs/acre)	Square Feet (building) per Employee*
High Density Commercial	0.4	36.00-48.00	400
Low Density Commercial	0.2	15.00-35.99	500
Industrial	0.2	10.65	825
Mixed Use	0.4	36.00-48.00	400
Other Allocation Uses			
<i>Urban Reserve</i>			
<i>Government Jobs</i>			
<i>Education</i>			
<i>Agriculture</i>			
<i>Public Lands and Open Space</i>			
<i>Water Bodies</i>			
<i>* Columns in Orange are UPLAN inputs</i>			

The resulting difference between SED for year 2010 and 2040 (less the employment growth referenced above) was then applied as “growth” and reallocated across the region consistent with growth controls and UPLAN model parameters reflected in Tables 6-3 and 6-4.

Results of the land use allocation process using UPLAN for each of the three alternative SCS scenarios are graphically displayed in Figures 6-1 through 6-3.

FIGURE 6-1
Status Quo Scenario Land Use Allocation

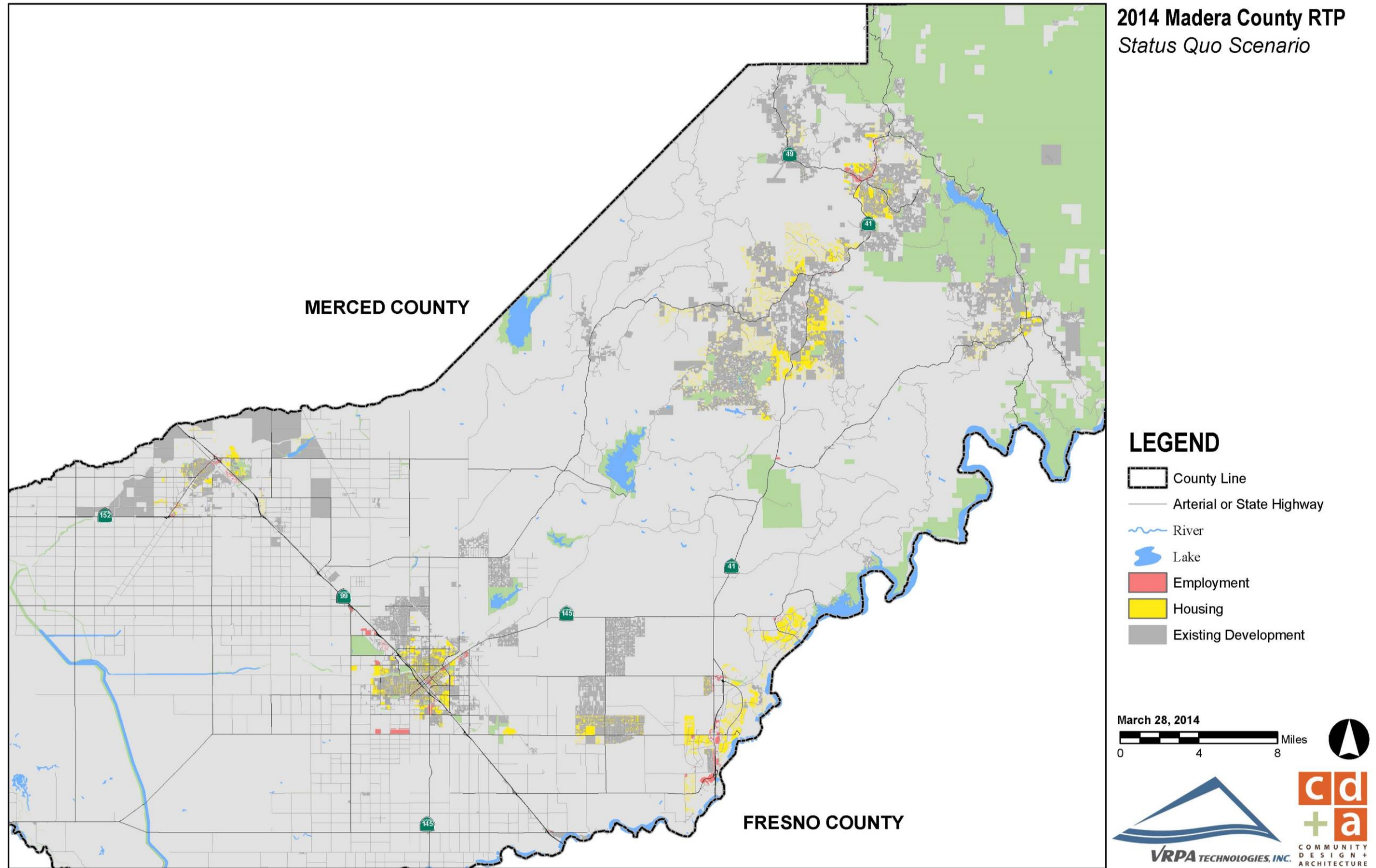


FIGURE 6-2
Low Change Scenario Land Use Allocation

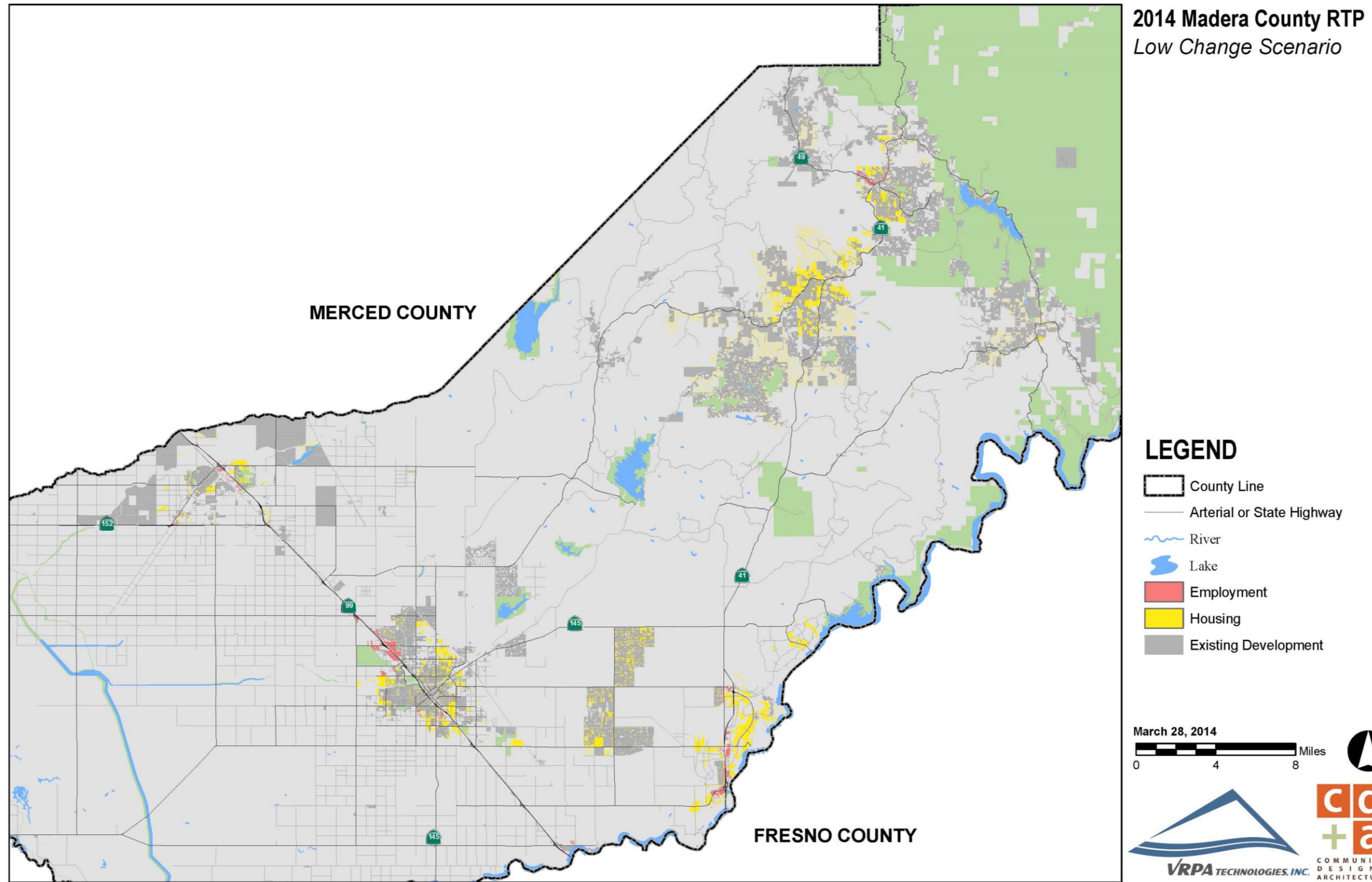
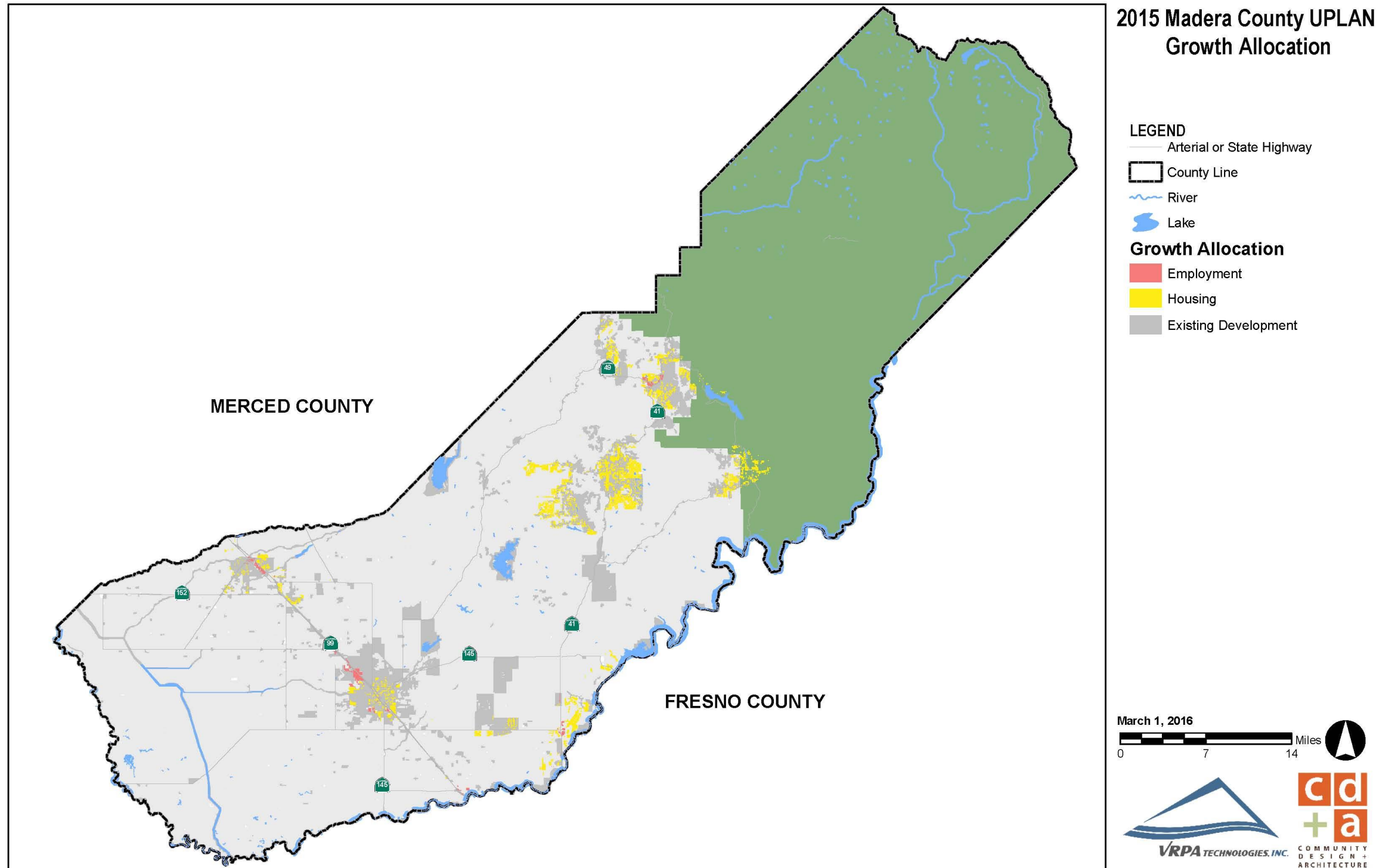


FIGURE 6-3
Hybrid Scenario Land Use Allocation



Step 6 - Run Scenario Datasets using the Traffic Model for Years 2020, 2035, and 2040

This section outlines the traffic modeling process conducted once the RTP and SCS land use alternatives were finalized. In general, the process consisted of:

- ✓ Developing **inputs** needed by the MCTC travel forecast model
- ✓ **Running the model** for each future land use scenario and developing forecasts for horizon years required for the RTP (2020, 2035 and 2040)
- ✓ Checking and formatting the **model outputs** for analysis and to serve as inputs to the emissions modeling

Inputs to the model include socioeconomic data by TAZ, e.g.; average income, land use data and densities, vehicle ownership or vehicle availability; and transportation network characteristics, including type of facility, speed, and capacity, and average transit headways, where applicable. The model runs entail calculation of trip generation, distribution, assignment and mode shares. Model outputs include TAZ-level and network trip data by mode; roadway level of service data by road segment; and trip and VMT data by speed category for EMFAC emissions analysis.

Roadway improvement project lists were developed by MCTC with input from the County and the Cities of Madera and Chowchilla. All regionally significant transportation network improvements were reflected in the MCTC travel forecast model. A regionally significant improvement may be defined as one that could affect the destination, route or transportation mode chosen by travelers using motorized transportation. Typical improvements added to the model consist of street and highway widenings and roadway extensions. Several proposed improvements were removed from the model because funding sources could not be definitively identified.

Roadway improvements added to the model are systematically identified by location, project limits, the nature of the improvement, and the projected opening year. Transit improvements are not coded separately, since public transportation in the Madera region is rubber-tired and uses roadways. Transit travel times and attractiveness were updated in the model to reflect faster travel times on improved roads, as well as improved transit headways where applicable.

Effort was made to ensure that the land use forecasts would be compatible with MCTC's transportation forecast model. To this end, the land use forecasts were developed using the same zone system as the travel demand model. Once the future land use scenarios were finalized the results were translated to match the categories used in the travel demand model. Other TAZ data, such as income and household types and size were based on Census data and official forecasts for the Madera region.

As noted above, the MCTC model underwent a major upgrade as part of the Valley-wide Model Improvement program in 2011-12 and the model was revalidated to 2010 conditions in 2016. Thus, there was no need for adjustments to the underlying transportation models. Vehicle operating costs, vehicle ownership factors were unchanged from the calibration model. No post-modeling adjustments were

made to represent employer-based ridesharing or transit incentive programs, or to reflect possible effects of fine-scale mixture of interdependent land uses to the RTP forecasts.

The future model run outputs were reviewed for accuracy and reasonableness. For example, total population and employment and total trip generation for the Madera region was compared to total VMT assigned to the network to ensure that the volume of additional traffic assigned to the network was roughly proportional to the increased level of development in the region. Roadway volumes were checked across key facilities and screen lines to ensure that traffic was being assigned to the network in a reasonable manner, e.g., that new and improved facilities were attracting traffic appropriate to their speed, capacity and activity concentrations they serve.

The final step was to provide model dataset files to MCTC. The types of files provided include land use and socioeconomic data for the base year and each future scenario, as well as a master roadway file used with each future land use scenario.

Videos documenting key steps taken to produce each model run and outputs were also provided to MCTC. These short videos document and demonstrate several common model update procedures: how to edit the model's roadway networks; how to set up and run model scenarios using alternative land use and network files; and how to interpolate land use and external station traffic to estimate any year between the base year (2010) and RTP horizon year (2040).

Step 7 - Using EMFAC – Determine GHG Emissions for each Scenario for Years 2020 and 2035

This step focused on processing traffic model datasets or output for each scenario through the CARB-developed Emissions FACTor (EMFAC2014) model to estimate GHG emissions for years 2020 and 2040, as well as other Air Quality Conformity emission results for these and other years related to the State Implementation Plan (SIP) and the RTP horizon year of 2040.

Step 8 – Compare GHG Results to 2005 Base Year GHG Emissions and determine if results meet the GHG Emission Reduction Targets from 2005 Base Year of 5% by 2020 and 10% by 2035

Table 6-6 provides the results of the SCS Scenario GHG reductions from the 2005 Base Year for year 2020 from the 2005 Base Year of 5 percent by 2020 and 10 percent by the year 2035. Results show that the RTP and SCS will surpass the established emission reduction targets.

TABLE 6-6
Demonstration of GHG Emission Reduction Targets

Year	GHG Per Capita Reduction Targets	MCTC Per Capita GHG Reduction
2020	5.0%	12.5%
2035	10.0%	23.5 %

The scenarios were also evaluated or compared using a set of performance measures. Results of the performance measures for each alternative scenario are reflected in Table 6-7. For most of the measures, the scenarios resulted in improvements with more compact growth options. However, the Status Quo scenario does perform better for the consumption of land in environmentally sensitive areas. This is due to the fact that the other scenarios infill vacant and underdeveloped parcels in the Ranchos area between SR 145 and Avenue 15. The same area is also classified by the Federal Emergency Management Agency (FEMA) as being within a designated floodplain area.

Resource Areas and Farmland

The Madera region has a very strong attachment to its open spaces and agricultural areas and is economically dependent the agricultural industry. The region’s economic wellbeing is dependent upon the vast amount of farmland that produces billions of dollars’ worth of agricultural products. In addition to identifying areas where development is projected to occur, the SCS identified protected parklands and open space, natural resource areas, and farmland during application of the UPLAN land use allocation modeling process.

UPLAN utilized geographic information system layers to identify resource lands and keep growth and development from encroaching or consuming such sites to the extent possible. Referencing Table 6-5, the Hybrid or preferred transportation and land use scenario will impact or consume approximately 136 acres of agricultural or resource lands as growth and development occurs between now and the year 2040. Figures 6-4 through 6-6 depict the farmland that will be impacted or consumed as a result of each of the alternative SCS scenarios.

An important tool that will document how natural resources support the region’s economy, health and quality of life, and to identify strategies to guide stewardship of land, water and living resources the Strategic Growth Council has funded the San Joaquin Valley Greenprint project. The project covers the eight (8) counties within the San Joaquin Valley.

A Steering Committee has been formed that consists of individuals representing the public and private sector and a diverse range of interests in the Valley’s resources. The Greenprint has identified and

compiled data for the natural resources in the San Joaquin Valley. The second phase is developing principles to guide resource management options and strategies.

Capturing Public & Stakeholder Input

Between February and April 2013, MCTC held the **first series** of public workshops regarding the 2014 RTP/SCS throughout Madera County on the following dates and within the following subregions:

- ✓ February 12, 2013 Oakhurst Community Center, Oakhurst, CA
- ✓ February 13, 2013, Madera Ranchos, CA
- ✓ February 19, 2013, Madera, CA
- ✓ February 21, 2013, Chowchilla, CA
- ✓ April 6, 2013, Camarena Health Center, Madera, CA (Environmental Justice Workshop)
- ✓ April 21, 2013, Madera Community Garden Earth Day Event, Madera, CA (Environmental Justice Workshop)

VRPA Technologies, Inc. (VRPA), the prime consultant working with MCTC to develop the RTP and SCS, conducted each of the workshops considering the following objectives:

- ✓ Educate the public about the purpose of the RTP and SCS and why it is being prepared by MCTC
- ✓ Provide information about the MCTC 2014 RTP and SCS including population, housing and employment growth expected between 2013 and 2040, and the RTP and SCS development process and schedule
- ✓ Give the public an opportunity to speak with the MCTC/VRPA Project Team members about the RTP and SCS development and associated legislation
- ✓ Identify how the role of the public and stakeholders is important to the success of the RTP and SCS
- ✓ Receive feedback on:
 - Demographics of attendees
 - Attendee knowledge of livable communities concepts and potential strategies using polling
 - Transportation and land use needs/issues and environmental constraints/benefits identified by attendees using a mapping exercise

Between November 2012 and March 2014, MCTC and VRPA Technologies, Inc. conducted five (5) Roundtable meetings to assist with preparation of the 2014 RTP and SCS. In addition, VRPA Technologies, Inc. and MCTC conducted a workshop on March 25, 2014 in Madera to review the alternative SCS scenarios with stakeholders and the public prior to selection of the preferred SCS scenario by the MCTC Policy Board.

TABLE 6-7
2014 RTP AND SCS PERFORMANCE MEASURES OF MODELED SCENARIOS

Type	Performance Measure/Indicator	Definition	Status Quo	Low Change	Hybrid
Land Use (Location Efficiency)	Residential density	Average residential density for new growth	2.9	3.2	3.3
	Percent of work trips less than 10 miles	Share of total work trips which are fewer than 10 miles	31%		31%
	Work trip length distribution - Minutes (Miles)	Statistical distribution of work trip length in the region	30.09 (24.14)		30.17 (24.23)
	Percent of work trips crossing county boundaries	Share of total work trips which are crossing county boundaries for jobs	52%		52%
	Housing	Percent of housing by types	87.1%/12.9%	80.0%/20.0%	75.4%/24.6%
	Compact development	Growth in population compared with acres developed	8.5	9.3	9.7
Transportation (Mobility, Accessibility, and Reliability)	Access to transit line	New housing development within half-mile of transit stops	N.A.	4,374/11.7%	9,353/13.0%
	(Recurrent) person delay per capita	Daily delay per capita in minutes	0.0038		0.0036
	Average distance for work trips in minutes and miles	Work average distribution in minutes and miles (excluding through): Minutes (Miles)	W - 30.09 / NW - 24.14		W - 30.17 / NW 24.23
	Average distance for non-work trips in minutes and miles	Non-work average distribution in minutes and miles (excluding through): Minutes (Miles)	W - 14.08 / NW - 8.17		W - 14.19 / NW - 8.29
	Percent of work trips accessible in 30 minutes	% of work opportunities (trip ends) within 30 minutes of household (home-based work)	86%		87%
	Percent of non-work trips accessible in 15 minutes	% of non-work opportunities (trip ends) within 15 minutes of household (home-based other)	81%		81%
	Vehicle miles traveled (VMT)	Total VMT and per capita VMT	5,312,578 / 20.04	5,253,752 / 19.81	5,241,875 / 19.77
	Congested vehicle miles traveled (VMT)	Congested VMT total and per capita, percentage of total auto/transit travel in congested conditions (peaks, all day)	218,149		241,857
	Commute travel (work trip) mode share	Weekday trips by mode - Peak (Off Peak)			
		Drive Alone	37.56% (36.93%)		40.71% (40.03%)
		Shared-Ride 2	32.28% (31.74%)		31.31% (30.78%)
		Shared Ride 3+	28.58% (28.11%)		26.21% (25.32%)
		Transit	0.18% (0.33%)		0.31% (0.39%)
		Walk	0.12% (0.26%)		0.14% (0.30%)
		Bike	1.28% (2.63%)		1.46% (3.00%)
Healthy Environment	Criteria pollutants emissions	CO, NOX, PM2.5, PM10, and VOC	7.89, 2.32, 0.17, 0.37, 0.79	7.81, 2.29, 0.17, 0.36, 0.78	7.79, 2.29, 0.17, 0.36, 0.78
	Greenhouse gas reduction	Per capita greenhouse gas reduction against 2005	+10.32%	+9.7%	-23.5%
	Fuel consumption	On-road fuel consumed in gallons per capita	1.41		1.39
	Active transportation and transit travel	Weekday person trips by transit, walk and bike modes	33,923	32,571	33,101
	Near-roadway exposures	Percent of new housing within 1,000 feet of freeway or major roadway	19,392 / 52.0%	23,100 / 61.7%	23,403 / 62.5%
	Percent investment in active transportation	Investment in active transportation (sidewalks, bike lanes, etc.) as compared to total plan			
Social Equity	Accessibility	Average A.M. peak work trip time by mode by Environmental Justice (EJ) and Non-EJ Traffic Analysis Zones (TAZ)			
	All Zones to All Zones:				
	Peak Drive Alone Travel Time		19.7	19.78	
	Peak Shared Ride Travel Time		17.28	17.37	
	Peak Transit Travel Time		43.07	43.65	
	Off-Peak Drive Alone Travel Time		13.65	13.79	
	Off-Peak Shared Ride Travel Time		13.95	14.1	
	Off-Peak Transit Travel Time		43.38	44.23	
	All Zones to EJ Zones:				
	Peak Drive Alone Travel Time		11.33	11.79	
	Peak Shared Ride Travel Time		9.76	10.13	
	Peak Transit Travel Time		36.19	36.42	
	Off-Peak Drive Alone Travel Time		8.83	9.14	
	Off-Peak Shared Ride Travel Time		8.78	9.12	
	Off-Peak Transit Travel Time		35.64	36.2	
	EJ Zones to All Zones:				
	Peak Drive Alone Travel Time		14.2	14.25	
	Peak Shared Ride Travel Time		11.22	11.4	
	Peak Transit Travel Time		38.06	37.9	
	Off-Peak Drive Alone Travel Time		8.81	9.13	
Off-Peak Shared Ride Travel Time		8.77	9.1		
Off-Peak Transit Travel Time		37.65	37.43		
Equity	Comparison of percentage of person-miles of travel with percentage of transportation investment for EJ and non-EJ TAZ				
*** Transit person miles traveled (PMT) for all zones - Daily PMT		7,166		6,570	
*** Transit PMT for EJ zones - Daily PMT		6,024		5,455	
Resource Conservation	Land consumption	Acres of land consumed due to new development	14,503	13,145	12,652
	Important farmland	Total acres of important farmland (prime, unique and state-wide importance) consumed due to new growth	146	142	136
	Environmental resource land	Total acres of resource areas (CNDDDB, critical habitat, FEMA, habitat connectivity, riparian forest, vernal pools & wetlands)	975	1,255	1,233
	Water consumption	Daily water consumption by new housing development based on national average rates	2,597,713	2,443,487	2,376,819

FIGURE 6-4
Status Quo SCS Scenario Farmland Consumed

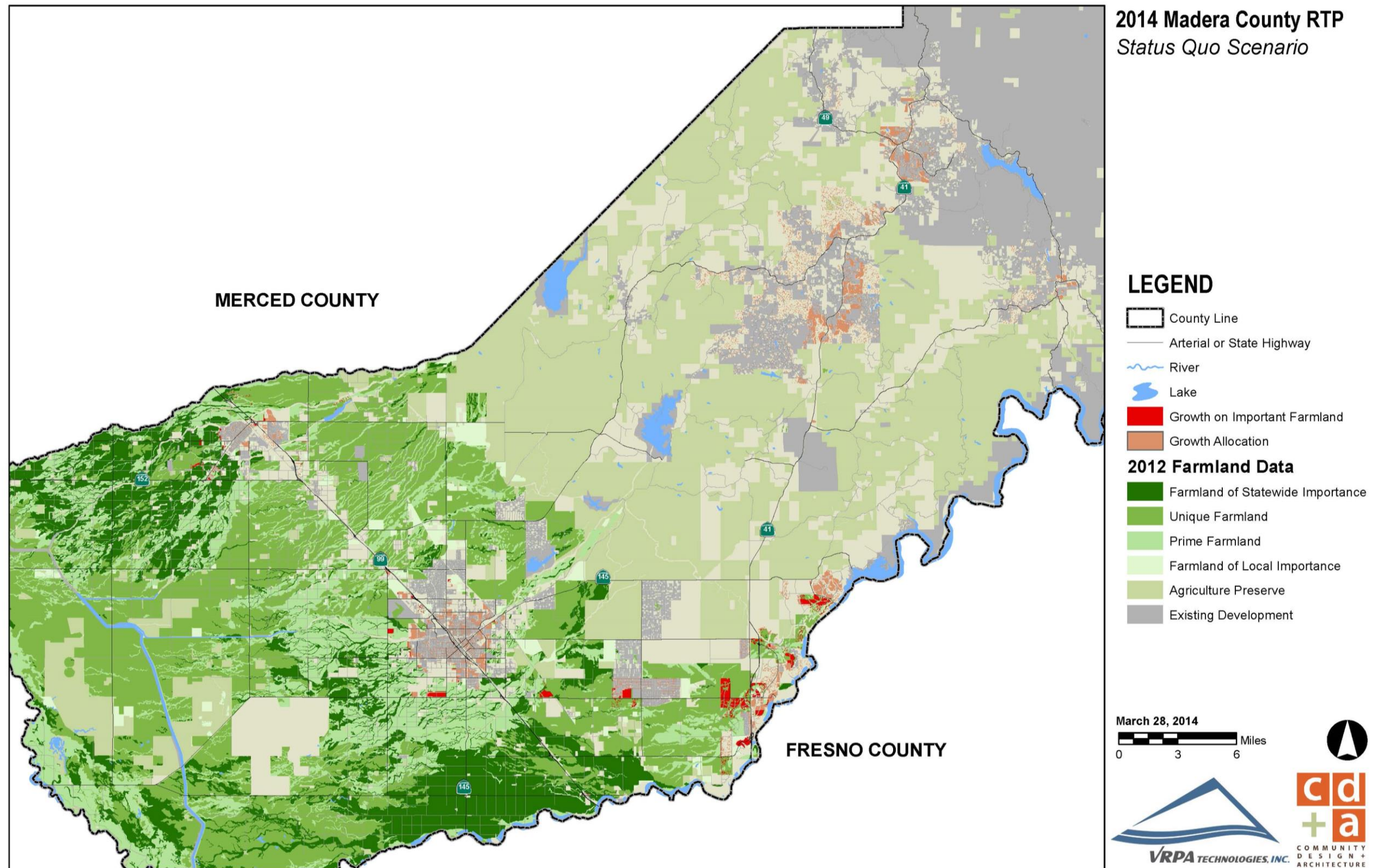


FIGURE 6-5
Low Change SCS Scenario Farmland Consumed

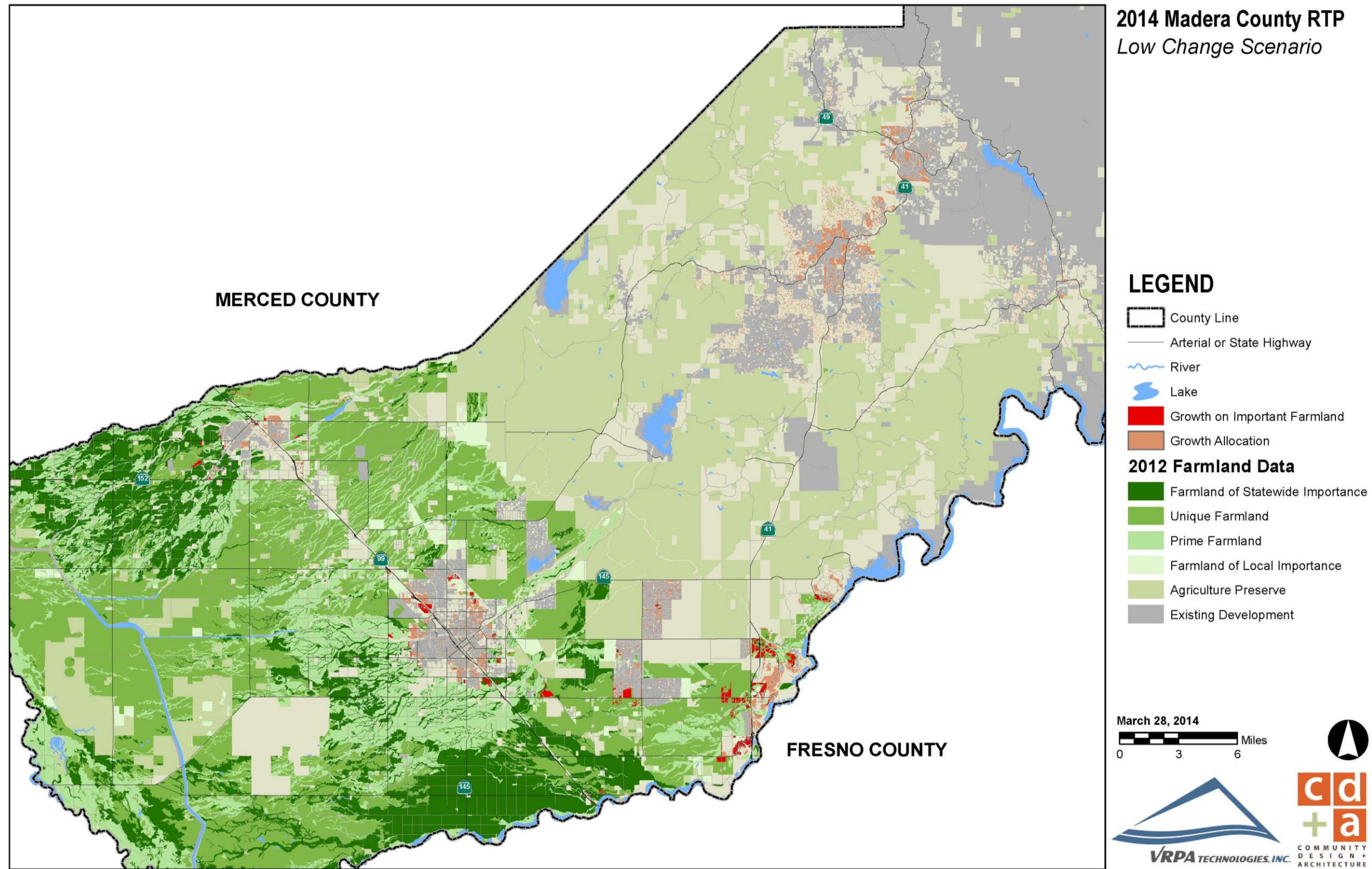
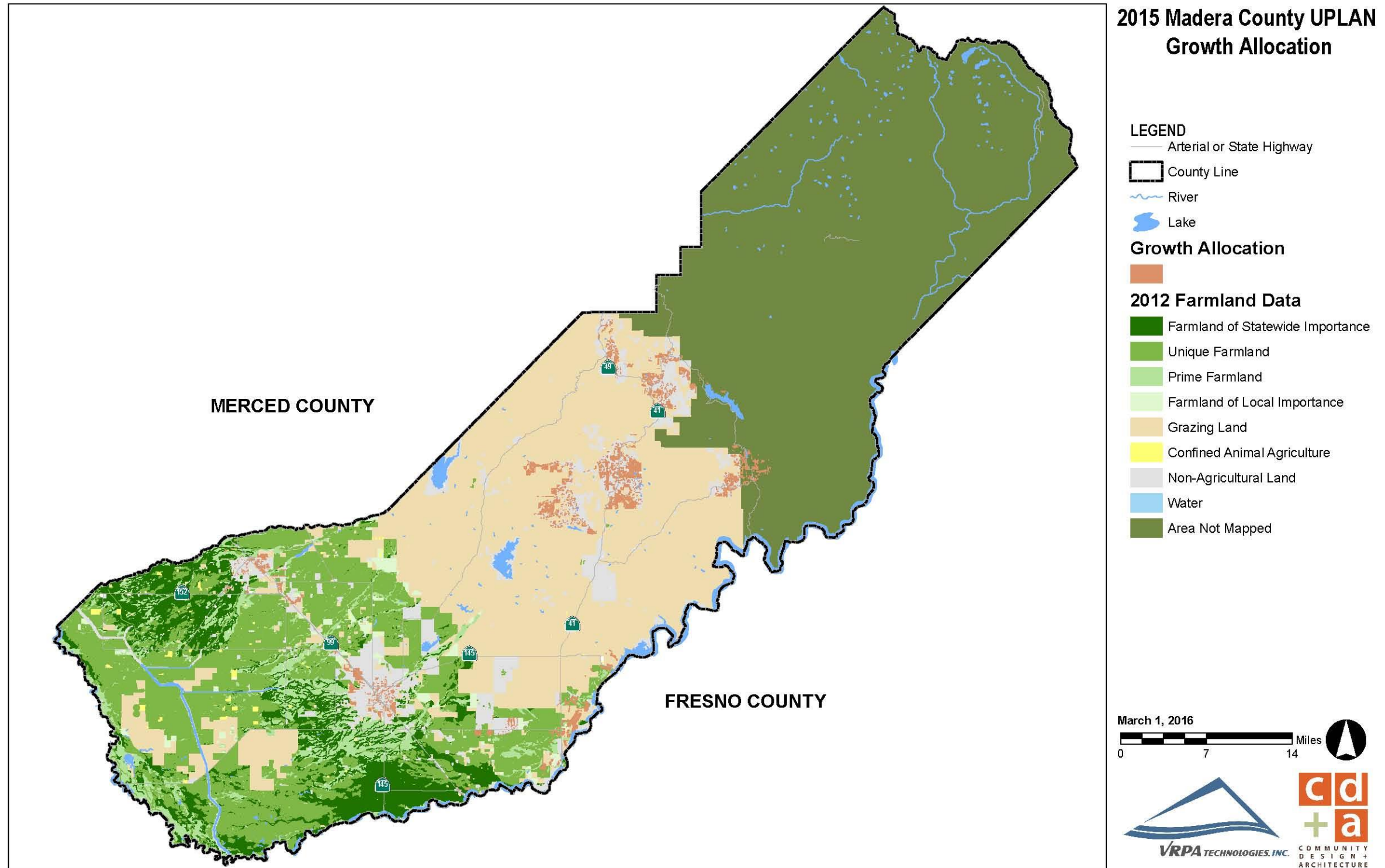


FIGURE 6-6
Hybrid SCS Scenario Farmland Consumed



In addition, MCTC developed a web-based tool to gather input on each of the alternative scenarios from the general public within and adjacent to the Madera region. As of March 26, 2014, 312 persons had accessed the English version of the web-based tool and 91 accessed the Spanish version of the tool to provide their opinion about how Madera County should grow, the important issues that should be the focus of local and regional agencies, and to select a preferred SCS scenario.

On March 24, 2014, MCTC held a **second series** of workshops (1 public workshop) at MCTC offices to review the alternative land use and transportation scenarios with the public and stakeholders prior to approval of a preferred scenario by the MCTC Policy Board.

Between May and June 2014, MCTC held the **third series** of public workshops regarding the 2014 RTP/SCS throughout Madera County on the following dates and within the following subregions

- ✓ June 10, 2014 – City of Madera, CA
- ✓ June 11, City of Chowchilla, CA
- ✓ June 12, Oakhurst, CA – Foothill Communities

Two public hearings were also held and noticed including:

- ✓ June 18, 2014 at MCTC offices, Madera, CA
- ✓ June 23, 2014 at MCTC offices, Madera, CA



The following events or presentations were also held to review the Draft RTP and SCS:

- ✓ June 21, 2014, Camarena Health Center, Madera, CA (Environmental Justice Workshop)
- ✓ June 26, 2014, Oakhurst Community Alliance, Oakhurst, CA (Presentation)

The MCTC Board certified PEIR, FTIP, Conformity Finding, and the 2014 RTP and SCS on July 23, 2014.

Finally, MCTC will conduct a workshop and Roundtable meeting on March 9, 2017 to review amendment to the 2014 RTP/SCS (Amendment #1) and to discuss the upcoming 2018 RTP/SCS. In addition, materials regarding the upcoming workshop and Roundtable meeting have been distributed at various Town Halls conducted by Madera County Supervisors.

The MCTC Board is scheduled to certify the Addendum PEIR for the 2014 RTP/SCS Amendment #1 on May 17, 2017 at a noticed public hearing.

The Choice Scenario

On March 20, 2014, the RTP and SCS Roundtable reviewed results of the alternative scenario modeling process and agreed that the Hybrid scenario was the preferred SCS scenario. The Roundtable's recommendation to incorporate the Hybrid Scenario in the 2014 RTP was forwarded to the MCTC Policy Board for its consideration on March 26, 2014. On March 25, 2014, VRPA Technologies, Inc. and MCTC conducted a public visioning workshop to review and discuss the alternative SCS scenarios with the general public and stakeholders. At the March 26, 2014 MCTC Board meeting, the Policy Board reaffirmed the Roundtable's recommendation and approved the Hybrid scenario as the scenario that should be reflected in the RTP and implemented to reduce GHG emissions in Madera County. The Choice Scenario following enhancement of the 2016 Transportation Model remains the Hybrid Scenario.

RHNA Consistency

The Madera Regional Housing Needs Allocation (RHNA) is a short-term planning process that currently covers the period from 2014 – 2023. The RHNA determines the region's housing needs considering four (4) income categories including very low, low, moderate, and above moderate. The RHNA process takes place prior to the development of general plan housing elements by each of the local agencies. Previously, the RHNA process adhered to a five (5) cycle; however, SB 375 increased the cycle to 8 years. Linking the RHNA and SCS processes enhances the ability to integrate housing, land use, and transportation planning and meet the state's housing goals.

MCTC has worked very closely with each of the local agencies and the California State Department of Housing and Community Development (HCD) to develop the housing needs allocations. This process ensures that the RHNA and SCS are consistent and that the mix of housing types developed as part of the SCS Hybrid scenario can accommodate the mix of housing required to comply with RHNA allocations and address each of the economic segments of the population. Thus, the SCS will help the region address RHNA housing allocation needs through 2023.

Once the RHNA is complete and each local agency begins preparation of its housing element, the agencies will need to identify adequate sites to address its RHNA allocations. Housing elements are due no later than 18 months after the MCTC Board adopts the RTP and SCS.

Consistency with LAFCO Policies

SB 375 requires that MCTC consult/coordinate with the Local Agency Formation Commission (LAFCO), focusing on the adopted Spheres of Influence (SOI) for each city adopted by LAFCO. The Madera LAFCO coordinates local and timely changes in local governmental boundaries (§56001); makes special studies to obtain and furnish information which contribute to the logical and reasonable development of local agencies; and prepares spheres of influence determinations for each local agency within the County

(§56425). The Commission also promotes the efficient extension of services while encouraging the protection of agricultural and open space lands (§56001). Further efforts include discouraging urban sprawl and encouraging orderly formation and development of local agencies based upon local conditions and circumstances (§56301).

For the MCTC RTP and SCS, Madera LAFCO was a member of the RTP and SCS Roundtable represented by County Planning staff. During development of the RTP and SCS, MCTC and LAFCO/County Planning staff met often to review SCS requirements, and to discuss growth projections and growth areas.

Social Equity Considerations

As part of its transportation planning process, MCTC has developed an approach to ensuring that environmental justice (EJ) principles are considered during development of regional plans and programs. The RTP also reflects the analysis of RTP and SCS projects and programs on EJ communities and whether or not the EJ communities are impacted or disproportionately affected by the projects and programs in the RTP and SCS. Based upon the modeling conducted for the RTP and SCS, the projects and programs contained in the RTP and SCS will not impact or disproportionately affect EJ communities in the Madera region (reference Chapter 10 – *Addressing Environmental Justice*). Under Title VI and related statutes, MCTC assures that no person shall on the grounds of race, color, or national origin, as provided by Title VI of the Civil Rights Act of 1964, and the Civil Rights Restoration Act of 1987 (P.L. 100.259), be excluded from participation in, be denied the benefits of or otherwise subjected to discrimination under any agency-sponsored program or activity. Nor shall sex, age or disability stand in the way of fair treatment of all individuals. MCTC further assures that every effort will be made to ensure nondiscrimination in all of its programs and activities, whether those programs and activities are federally funded or not.

As noted previously, MCTC has conducted its RTP and SCS outreach program across all sectors of the Madera region, and specifically conducted events and workshops in Spanish to gain input from the EJ communities. In addition, MCTC provided the SCS web-based tool in Spanish to capture input from the Spanish-speaking public and ensure that access to such tools was provided to all Maderans.

Public Health Benefits

MCTC recognizes that the 2014 RTP and SCS may have an impact on the health of the region’s residents. Research shows that certain aspects of the transportation infrastructure, including public transit, sidewalks and safe street crossings near schools, and bicycle paths, are associated with more walking and bicycling, greater physical activity, and lower obesity rates. The RTP and SCS supports the integration of transportation and land use policies, projects, and programs that will enhance public health improvements through active transportation modes such as those noted above. The Hybrid scenario enhances health in the region by improving the connection between land use and transportation. The result is more walkable communities, increased bicycling, more people using transit, and better access to

healthy food. Health improvements can also be affected or improved through a less-carbon intensive vehicle fleet. Through near zero and zero-emission vehicle technologies, the 2014 RTP and SCS promotes a more sustainable future for the region that includes lessened tail pipe emissions from the vehicles.

CEQA Streamlining

SB 375 identifies CEQA streamlining allowances and how they will be applied by the local agencies as growth and development occurs throughout the region. Specifically, SB 375 includes opportunities for streamlining the CEQA process, when certain conditions are met, as an incentive for implementing projects that are consistent with this SCS. There are two types of projects for which CEQA requirements can be streamlined once MCTC adopts the 2014 RTP and SCS that meets the greenhouse gas targets established by CARB: residential/mixed use projects and transit priority projects. MCTC will begin developing CEQA streamlining guidelines in 2017.

Other Changes to the Adopted 2014 RTP/SCS (are replaced with the following sections)

2. Requirements, Trends & Content

The following bullets replace the last bullet titled “Level of Service” on Page 2-9 of the adopted 2014 RTP/SCS:

- Original 2014 RTP and SCS LOS Segment Analysis Using the 2013/2014 MCTC Transportation Model

Results of the original LOS segment analysis applied during development of the approved 2014 RTP and SCS along the RTP Regionally Significant Roads System are reflected in Figure 2-3 (Madera County) and Figure 2-4 (Cities of Madera and Chowchilla). LOS results are shown for the PM Peak Hour unless the AM Peak Hour results identified greater deficiencies. Results of the LOS analysis indicates that two (2) segments along the Regionally Significant Road System are currently operating at LOS “D” through “F” for State Routes and no or zero local street and highway segments are operating at LOS “E” or “F”. The resultant list of existing deficient facilities along the Regionally Significant Roads System and other important facilities provides an opportunity for MCTC, Caltrans, and local agencies to focus on projects that will improve the overall LOS of the regional network in the future.

- 2014 RTP/SCS LOS Segment Analysis Using the 2016 MCTC Transportation Model

Table 5-3 in Chapter 5 provides a comparative analysis of roadway level of service (LOS) impact of the 2014 RTP/SCS referenced above with analysis using the enhanced and revised MCTC Transportation Model. Examining Table 5-3, it is evident that the enhanced transportation modeling indicates the same or reduced traffic impacts at most segment locations compared to the original analysis referenced above. Three cases of apparently worsened impact were examined more closely. This further analysis found that the SR 99 - SB Off Ramp at Olive Avenue will function adequately at the signalized intersection at the end of the ramp, which is the critical location controlling flows from the ramp. At the two other locations with apparent worsening LOS (Avenue 16 from Granada Drive to Schnoor Street, and Avenue 12 from Road 36 to Road 38), it was found that the apparent degradation was due to incorrect modeling and analysis assumptions. With appropriate inputs and assumptions, it was determined that each of these roadway segments will operate at an acceptable Level of Service (LOS). Therefore, the 2014 RTP/SCS Amendment #1 will not further exceed, either individually or cumulatively, the level of service standard.

5. Delivering the Plan for Change

The following bullets replace the bullet titled “Level of Service” on Page 5-12 of the adopted 2014 RTP/SCS:

- Original 2014 RTP and SCS LOS Segment Analysis Using the 2013/2014 MCTC Transportation Model

Results of the original LOS segment analysis applied during development of the approved 2014 RTP and SCS along the RTP Regionally Significant Roads System are reflected in Figures 5-5 and 5-6 (Madera County) and Figures 5-7 and 5-8 (Cities of Madera and Chowchilla). LOS results are shown for the PM Peak Hour unless the AM Peak Hour results identified greater deficiencies. Results of the LOS analysis indicates that two (2) segments along the Regionally Significant Road System are currently operating at LOS “D” through “F” for State Routes and no or zero local street and highway segments are operating at LOS “E” or “F”. The resultant list of existing deficient facilities along the Regionally Significant Roads System and other important facilities provides an opportunity for MCTC, Caltrans, and local agencies to focus on projects that will improve the overall LOS of the regional network in the future.

- 2014 RTP/SCS LOS Segment Analysis Using the 2016 MCTC Transportation Model

Table 5-3 below provides a comparative analysis of roadway level of service (LOS) impact of the 2014 RTP/SCS referenced above with analysis using the enhanced and revised MCTC Transportation Model. Examining Table 5-3, it is evident that the enhanced transportation modeling indicates the same or reduced traffic impacts at most segment locations compared to the original analysis referenced above. Three cases of apparently worsened impact were examined more closely. This further analysis found that the SR 99 - SB Off Ramp at Olive Avenue will function adequately at the signalized intersection at the end of the ramp, which is the critical location controlling flows from the ramp. At the two other locations with apparent worsening LOS (Avenue 16 from Granada Drive to Schnoor Street, and Avenue 12 from Road 36 to Road 38), it was found that the apparent degradation was due to incorrect modeling and analysis assumptions. With appropriate inputs and assumptions, it was determined that each of these roadway segments will operate at an acceptable Level of Service (LOS). Therefore, the 2014 RTP/SCS Amendment #1 will not further exceed, either individually or cumulatively, the level of service standard.

TABLE 5-3
2014 RTP/SCS Model LOS Results VS. 2016 Model LOS Results

ROADWAY SEGMENT	2040 LOS DEFICIENCIES			NOTES AND COMMENTS
	MCTC 2014 RTP and SCS	AM Peak	PM Peak	
SR 41 - County Line to Allen Road	LOS C or Better	LOS C or Better	LOS C or Better	No change.
SR 41 - Allen Road to Bass Lake Road	LOS C or Better	LOS C or Better	LOS C or Better	No change.
SR 41 - SR 49 to Road 420	LOS E	LOS D	LOS C or Better	Segment was deficient for AM or PM conditions under either model.
SR 41 - Holly Lane to Road 415	LOS E / F (partial)	LOS E	LOS F (NB) / E (SB)	AM Peak in 2016 improved. PM Peak still deficient. No change for segment.
SR 41 - Road 415 to Spinelli Road	LOS C or Better	LOS C or Better	LOS C or Better	No change.
SR 41 - Spinelli Road to Road 200	LOS C or Better LOS D (partial) / LOS F (partial)	LOS E	LOS C or Better	LOS improved.
SR 41 - Road 200 to Road 406	LOS F	LOS F	LOS D (NB)	LOS improved.
SR 41 - Road 406 to SR 145	LOS C or Better LOS D (partial) / LOS F (partial)	LOS C or Better LOS D (partial) / LOS F (partial)	LOS C or Better LOS D (NB)	LOS improved.
Avenue 9 - Road 40 to Crockett Way	LOS C or Better LOS D (partial)	LOS D	LOS C or Better	LOS improved.
SR 99 - Avenue 27 to Avenue 24 1/2	LOS C or Better	LOS C or Better	LOS C or Better	No change.
SR 99 - Avenue 24 1/2 to SR 152	LOS C or Better	LOS C or Better	LOS C or Better	No change.
SR 99 - SR On-Ramp at Avenue 24	LOS C or Better	LOS C or Better	LOS C or Better	2016 LOS Within Min. LOS Standard
SR 99 - Avenue 20 SB Off Ramp to SB On Ramp	LOS C or Better	LOS C or Better	LOS D (NB)	2016 LOS Within Min. LOS Standard
SR 99 - Avenue 20 to Avenue 18 1/2 Off Ramp	LOS C or Better	LOS C or Better	LOS D	2016 LOS Within Min. LOS Standard
SR 99 - Avenue 18 1/2 SB Off Ramp to SB On Ramp	LOS C or Better	LOS C or Better	LOS D (SB)	2016 LOS Within Min. LOS Standard
SR 99 - Avenue 18 1/2 SB On Ramp to Avenue 17	LOS C or Better	LOS C or Better	LOS C or Better	2016 LOS Within Min. LOS Standard
SR 99 - Avenue 17 to Ellis Street	LOS C or Better	LOS C or Better	LOS C or Better	No change.
SR 99 - Airport Drive - South of Avenue 17	LOS C or Better	LOS C or Better	LOS D (NB)	2016 LOS Within Min. LOS Standard
SR 99 - Cleveland Avenue to 4th Street	LOS C or Better	LOS C or Better	LOS C or Better	No change.
H Street - North of 4th Street	LOS C or Better	LOS C or Better	LOS D (NB)	2016 LOS Within Min. LOS Standard
N Street - North of 4th Street	LOS C or Better	LOS C or Better	LOS D (SB)	2016 LOS Within Min. LOS Standard
SR 99 - Yosemite Avenue to Olive Avenue	LOS C or Better	LOS C or Better	LOS C or Better	LOS improved.
SR 99 - NB On Ramp at Madera Avenue	LOS C or Better	LOS F (partial)	LOS C or Better	2016 LOS Within Min. LOS Standard
SR 99 - SB Off Ramp at Olive Avenue	LOS C or Better	LOS C or Better	LOS E	Ramps inappropriate for LOS calculation; the signalized intersection LOS at end of the ramp will be Within Standard
Cleveland Avenue - Gateway Drive to Cleveland Avenue	LOS C or Better	LOS C or Better	LOS D (NB)	2016 LOS Within Min. LOS Standard
Cleveland Avenue - Raymond Road to SR 145	LOS C or Better	LOS C or Better	LOS C or Better	No change.
Tozer Street - SR 145 to Avenue 15	LOS C or Better	LOS C or Better	LOS C or Better	No change.
Avenue 16 - Granada Drive to Schnoor Street	LOS C or Better	LOS C or Better	LOS E (EB) (partial) LOS F (NB) (partial)	This is due to a modeling error. The links are already 2 lanes in each direction. The model is showing 1 lane in each direction. LOS with 4 lanes will be LOS D or better.
Avenue 15 - Road 28 to Road 28 1/2	LOS C or Better	LOS C or Better	LOS C or Better	No change.
Avenue 14 - SR 99 SB Off Ramp to Madera Avenue	LOS C or Better	LOS C or Better	LOS D (EB)	2016 LOS Within Min. LOS Standard
Avenue 14 - East of Roosevelt Ave	LOS C or Better	LOS C or Better	LOS D (EB)	2016 LOS Within Min. LOS Standard
Avenue 12 - Road 36 to Road 38	LOS C or Better	LOS C or Better	LOS D (partial) LOS E (partial)	Ave 12 has a segment with a two way left turn lane and a segment without a two way left turn lane. If the two way left turn lane is extended to the entire segment in the future, LOS D would be achieved with the forecasted traffic. The Florida tables capacity value we would normally use for Madera County roadway segment analysis is conservative. This could be expressed mathematically by assuming more green time than the default value, if needed. If the two way left turn lane is not extended in the future, we could still claim LOS D as the result. If we consider Avenue 12 to be a rural/uninterrupted roadway in the segment without a two way left turn lane, which it will continue to function as. The area is not considered urban.

8. Public Involvement for Change

The following paragraphs replace the last paragraph under Series 3 on Page 8-3 of the adopted 2014 RTP/SCS:

The MCTC Board certified PEIR, FTIP, Conformity Finding, and the 2014 RTP and SCS on July 23, 2014.

Finally, MCTC will conduct a workshop and Roundtable meeting on March 9, 2017 to review amendment to the 2014 RTP/SCS (Amendment #1) and to discuss the upcoming 2018 RTP/SCS. In addition, materials regarding the upcoming workshop and Roundtable meeting have been distributed at various Town Halls conducted by Madera County Supervisors.

The MCTC Board is scheduled to certify the Addendum PEIR for the 2014 RTP/SCS Amendment #1 on May 17, 2017 at a noticed public hearing.

The following paragraph replaces the last paragraph on Page 8-4 of the adopted 2014 RTP/SCS:

The MCTC Policy Board certified the 2014 RTP/SCS PEIR and approved the 2014 RTP/SCS on July 24, 2014. A copy of the notice is provided in Appendix E. The MCTC Board will consider certification of the 2014 RTP/SCS Amendment #1 Addendum PEIR and adoption of the 2014 RTP/SCS Amendment #1 on May 17, 2017.

9. Environmental Compliance

The following paragraph is added to the bottom of Page 9-1 of the adopted 2014 RTP/SCS:

The MCTC Policy Board certified the 2014 RTP/SCS PEIR and approved the 2014 RTP/SCS on July 24, 2014. The MCTC Board will consider certification of the 2014 RTP/SCS Amendment #1 Addendum PEIR and adoption of the 2014 RTP/SCS Amendment #1 on My 17, 2017.