

CHAPTER 3

SUSTAINABLE COMMUNITIES STRATEGY

The MCTC 2022 Regional Transportation Plan and Sustainable Communities Strategy (RTP/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.

To meet the reduction targets for SB 375, Madera County must reduce GHG emission per capita by 10% in 2020 and 16% by 2035 compared to 2005 GHG per capita. Achieving this is done through an array of transportation and land use strategies contained within a defined planning scenario.

SB 375 requires the integration of transportation, land use, and housing planning with the next updates of the RTPs and Regional Housing Needs Assessment (RHNA). 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 (TSM), Transportation Control Measures (TCM) 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. 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

Public Engagement

MCTC initiated an aggressive effort to meaningfully engage with stakeholders across the region to inform about the RTP/SCS and hear participants input on the region's future. Feedback received from engagement was important to establish the Goals, Objectives and Strategies in the Financial Element, as well as providing insight on what issues matter regarding scenario development.



Figure 3-1 Public Workshop in La Vina

Outreach efforts included many different strategies; therefore, those who were interested in participating had an array of different opportunities to do so. All engagements, whether in person or online, were available in English or Spanish. MCTC worked with outreach specialists to implement the following engagement strategies:

- Online workshops

- Neighbor and Community in-person workshops and meetings
- Online surveying
- E-newsletters
- Social media posts
- Community event engagements
- Distribution through partner agencies networks
- Direct Email and telephone correspondence
- PC and Mobile phone feedback applications
- A project website

Several workshops were conducted in disadvantaged communities to allow for an inclusive process to hear the communities' concerns and feedback about their needs. Figure 3-1 shows one of the workshops in person, and Figure 3-2 shows one of the online workshops. Outreach efforts revealed several common themes:

- Maintenance and repair of infrastructure was a concern across the region.
- Improved access to employment, education, and shopping for persons of limited means in rural communities or outlying areas.
- Ensuring the multi-modal system is safe and reliable for all users.
- Ensuring local investments are made to uplift existing neighborhoods and communities.
- Improving environmental conditions of the region.



Figure 3-2 Public Workshop Online

Stakeholders also provided their thoughts on growth and future land use development types they thought should be pursued. Direct feedback and online surveying on growth and development revealed the following:

- A desire to see higher densities for new development.

- Development should be more focused on designated growth areas around urban corridors.
- There should be great housing variety.

The feedback received was ultimately reflected in the preferred SCS scenario for the region, offering the highest degree of suitability to the comments received.

Appendix C, Outreach Summary Report, contains a detailed outline of the comprehensive engagement process.

Scenarios Development

MCTC developed three new planning scenarios for the 2022 RTP/SCS. They were distinct from one another in its approach to land use growth and transportation strategies. Scenario 3 was selected as the preferred scenario.

Blueprint Background Data

In 2006, the eight regional planning agencies in the San Joaquin Valley came together in an unprecedented effort to develop a coordinated valley vision – the San Joaquin Valley Regional Blueprint. This eight-county venture was conducted in each county and was ultimately integrated to form a preferred vision for future development throughout the Valley to the year 2050.

On April 1, 2009, the San Joaquin Valley Regional Policy Council adopted a preferred growth scenario for the Valley along with 12 Smart Growth Principles to guide development and promote the livable and sustainable communities mentioned above.

Through 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. The 2014 and 2018 Madera County RTP/SCS alternative scenarios are based upon the original Blueprint parameters with slight revisions, highlighting the demographic shares, land use intensities, and spatial location preferences; however, the parameters have been revised slightly to increase housing and employment densities for the three alternative scenarios considered for the 2018 RTP/SCS.

MCTC has picked up where the 2018 RTP/SCS preferred scenario left off to start the land-use scenario planning element for the 2022 RTP/SCS with the intent being for greater GHG emission under the framework of the Madera Blueprint process, but to also ensure meaningful progress is sustained. MCTC have modified the previous Blueprint parameters to be responsive to outreach feedback received and new, more stringent GHG reduction targets. These modifications are gradual in their escalation.

The scenarios apply different standards by area type in Madera County. The four area types are:

1. City of Madera – Larger, urbanized city.
2. City of Chowchilla – Smaller, moderately urbanized city.
3. Urban Unincorporated – Developing into Large urbanized area (confined to southeastern Madera County).
4. Rural Unincorporated – Small rural communities in the valley, foothills, and mountains.

MCTC has prepared three scenarios for the 2022 RTP/SCS development. The scenarios are:

Scenario 1 Continued Trends – Assumes growth and housing development like what we see existing in our region today. Maintains a road-centric investment strategy with gradual increases towards multi-modal strategies.

- Assumes County-wide growth based on previously observed trends with no new land-use strategies
- Invests in public transit based on existing trends
- Invests in active transportation consistent with existing trends
- Focuses on addressing roadway travel conditions related to congestion, maintenance, and accessibility
- Is compliant with local jurisdiction General Plans
- Consumes 4,642 acres of Farmland
- Project 21.4% of housing within a ¼ mile of fixed route public transit
- Produces the highest vehicle miles traveled (VMT) per capita of the three scenarios
- Achieves the least GHG reduction per capita of the three scenarios

Scenario 2 Moderate Shift – Moderately increases densities of housing and development in urbanized areas with slight increases to densities in the remainder of the county. Conservative shift in investment towards zero-emission vehicle infrastructure, public transit, shared ride options, micromobility, and non-motorized transportation strategies.

- Applies focused land-use strategies by sub-region
 - City of Madera
 - South SR 41 Growth Area
 - City of Chowchilla
 - Rural Valley
 - Rural Mountain/Foothill
- Moderate change growths parameters in urban areas
 - Higher density new development in urban areas
 - Lower densities in rural areas
- Is compliant with local jurisdiction General Plans
- Invests more in public transit and active transportation
- Focuses on addressing roadway travel conditions related to congestion, maintenance, and accessibility
- Explores moderate investment towards additional transportation strategies
 - Vanpooling

- Telecommuting
- Electric vehicles and infrastructure
- Employer programs
- Travel demand strategies
- Bike and car sharing services
- Consumes 3,835 acres of Farmland
- Project 24.8% of housing within a ¼ mile of fixed route public transit

Scenario 3 Conservation and Mobility – Prioritized development in infill and redevelopment zones, assumes more compact lot sizes in core urban areas, moderate increases to densities in urban areas and slight increases to densities in the remainder of the county, outside of urban cores. Accelerates investment shift towards zero-emission vehicle infrastructure, public transit, shared ride options, micromobility, and non-motorized transportation strategies.

- Applies focused land-use strategies by sub-region
 - City of Madera
 - South SR 41 Growth Area
 - City of Chowchilla
 - Rural Valley
 - Rural Mountain/Foothill
- Moderate change growths parameters in urban areas
 - Higher density new development in urban areas
 - Lower densities in rural areas
- High focus on infill and urban core development
- Is compliant with local jurisdiction General Plans
- Invests more in public transit and active transportation
- Focuses on addressing roadway travel conditions related to congestion, maintenance, and accessibility
- Explores aggressive investment towards additional transportation strategies
 - Vanpooling
 - Telecommuting
 - Electric vehicles and infrastructure
 - Employer programs
 - Travel demand strategies
 - Bike and car sharing services
- Consumes 3,664 acres of Farmland
- Project 26.9% of housing within a ¼ mile of fixed route public transit
- **Produces the lowest vehicle miles traveled (VMT) per capita of the three scenarios**
- **Achieves the most GHG reduction per capita of the three scenarios**

Land Use Allocation

Land use categories from the Madera Travel Demand Model have been translated into a standardized land use category set to be used by the UPlan software. UPlan is a rule based urban growth model intended for regional or county level modeling. The needed space for each land use type is calculated from simple demographics and assigned based on the net attractiveness of locations to that land use (based on user

input), locations unsuitable for any development and a general plan that determines where specific types of development are permitted.

The Uplan parameters were based off outreach inputs received from outreach, then applied through a combination of local land use plans to ensure allocation would occur in a manner not inconsistent with locally approved planning and guidance documents.

This process established the contents of the land use parameters in place for the SCS scenarios. These can then be input into the Madera County Travel demand model. They will generate travel activity depending on where the various land uses are distributed in the region. The parameters of the scenarios were as follows:

Scenario 1 Continued Trends – Allocate growth in a manner consistent with past trends with slight increases to density or housing density share.

Scenario 2 Moderate Shift – Allocate growth toward established growth and urban area, moderate increases to lot sizes and housing density share.

Scenario 3 Conservation and Mobility – Allocate growth towards established growth and urban area, prioritize infill, further increase lot sizes and housing density share.

Table 3-1 depicts variances in lot size between area type for three scenarios. Table 3-2 depicts demographic shift in housing density type

Modelling Roadway Projects

MCTC utilizes the travel demand model to forecast Travel condition that result from trips being generated from various land uses throughout the county. The model uses land use, socioeconomic, and road network data to estimate travel patterns, roadway traffic volumes and performance measures.

The roadway network used in the traffic model is where projects that influence auto travel capacity are cumulatively assessed by the impact they cause by travel generated from land uses.

Roadway improvements added to the model are systematically identified by location, project limits, the nature of the improvement, and the projected opening year. MCTC has developed a list of roadway projects through consultation with local agencies responsible for implementing the projects and from feedback received from stakeholders. MCTC assesses each project with a criteria process outlined in the MCTC Project Prioritization Study (Appendix E).

The goals of the Project Prioritization Study were to identify and prioritize transportation projects that serve the region and help MCTC meet various goals related to Greenhouse Gas (as mandated by Senate Bill (SB) 375) reduction, reducing vehicle miles traveled (as mandated by both SB 375 and SB 743), better accommodating diverse modal choice, increasing traffic safety, supporting economic vitality, and decreasing adverse health effects related to travel throughout the Madera Region. The overall process also was designed to advance MCTC's overarching goal of further promoting social equity in transportation project delivery. A complete listing of all modal projects in the RTP/SCS can be viewed in *Appendix B Project Listing*.

Table 3-1 depicts variances in lot size between area type for three scenarios. Table 3-2 depicts demographic shift in housing density type.

Table 3-1 Scenario Lot Size Shift

Scenario 1	City of Chowchilla	City of Madera	Rural County	Urban County
Very Low and Very Low	6.75%	1.80%	56.00%	4.70%
Medium	80.00%	71.00%	42.00%	74.75%
Medium High	12.50%	20.00%	2.00%	18.20%
High	0.75%	7.20%	0.00%	2.80%
Scenario 2	City of Chowchilla	City of Madera	Rural County	Urban County
Very Low and Very Low	6.50%	1.00%	56.00%	3.05%
Medium	79.00%	65.00%	42.00%	70.75%
Medium High	13.00%	22.00%	2.00%	20.20%
High	0.75%	12.00%	0.00%	6.00%
Scenario 3	City of Chowchilla	City of Madera	Rural County	Urban County
Very Low and Very Low	6.50%	1.00%	53.00%	3.00%
Medium	79.00%	65.00%	42.00%	70.75%
Medium High	13.00%	22.00%	2.00%	20.25%
High	0.75%	12.00%	0.00%	6.00%

Table 3-2 Shift in Housing Density Type

Scenario 1	City of Chowchilla	City of Madera	Rural County	Urban County
Very Low and Very Low	6.75%	1.80%	56.00%	4.70%
Medium	80.00%	71.00%	42.00%	74.75%
Medium High	12.50%	20.00%	2.00%	18.20%
High	0.75%	7.20%	0.00%	2.80%
Scenario 2	City of Chowchilla	City of Madera	Rural County	Urban County
Very Low and Very Low	6.50%	1.00%	56.00%	3.05%
Medium	79.00%	65.00%	42.00%	70.75%
Medium High	13.00%	22.00%	2.00%	20.20%
High	0.75%	12.00%	0.00%	6.00%
Scenario 3	City of Chowchilla	City of Madera	Rural County	Urban County
Very Low and Very Low	6.50%	1.00%	53.00%	3.00%
Medium	79.00%	65.00%	42.00%	70.75%
Medium High	13.00%	22.00%	2.00%	20.25%
High	0.75%	12.00%	0.00%	6.00%

Scenario Transportation Objectives

Each scenario takes a different approach towards transportation strategies. The degree and aggressiveness of these strategies correlate to degree of aggressiveness to the land use aspects of the scenarios. The additional travel strategies include the following;

Scenario 1 Continued Trends – Only moderate increases in alternative modes to autos, such as transit and bike and pedestrian.

Scenario 2 Moderate Shift - Conservative shift in investment towards zero-emission vehicle infrastructure, public transit, shared ride options, micromobility and non-motorized transportation strategies.

Scenario 3 Conservation and Mobility - Accelerated investment shift towards active transportation, zero-emission vehicle infrastructure, public transit, shared ride options, micromobility and other alternative transportation strategies.

In Chapter 5, Financial Element, funding allocations for transportation highlight significant investment towards active transportation, public transit and road repair and rehabilitation. These investments align with the feedback stakeholders provided and the regions preferred scenario.

As part of the outreach effort, engagement participants were asked what other modal options they would consider viable for themselves and their neighborhood or communities. These options were specifically called out as transportation strategies that could help shift the single-occupancy vehicle transportation paradigm. These strategies ranged from already utilized investments such as public transit to strategies not yet applied in the Madera region such as transportation pricing. The strategies asked about include the following:

Transit Improvements

- Enhancing existing services or create new public transit connections.
- Restructure of existing services
 - Fares
 - Frequencies
 - Routes
- Improving accommodations
 - Building shelters
 - More accessible schedules
 - Rider phone apps

Bicycle and Pedestrian Investment

- Making improvements to the active transportation networks in communities, making non-motorized transportation a more viable choice.
 - Maintaining current facilities
 - Constructing new facilities
 - Safety signage, painting, and wayfinding

Car Sharing

- Creating mobility opportunities in rural or underserved communities through shared vehicle services.

Parking Management

- Parking management able to respond to peak demands within core urban areas.

Zero Emission Vehicles and Electric Vehicle Charging Infrastructure

- Integrating new vehicle technology, transition away from internal combustion engines to battery electric powered vehicles.

E-Scooter/Bike Share

- Moving people in urban areas using clean, micromobility options.

Telecommuting/ Virtual Instruction

- Understanding how communication has changed the past two years, where can we continue to benefit from that change.
- Expanding reliable broadband internet access in rural and remote communities.

Transportation System Management and Intelligent Transportation Systems

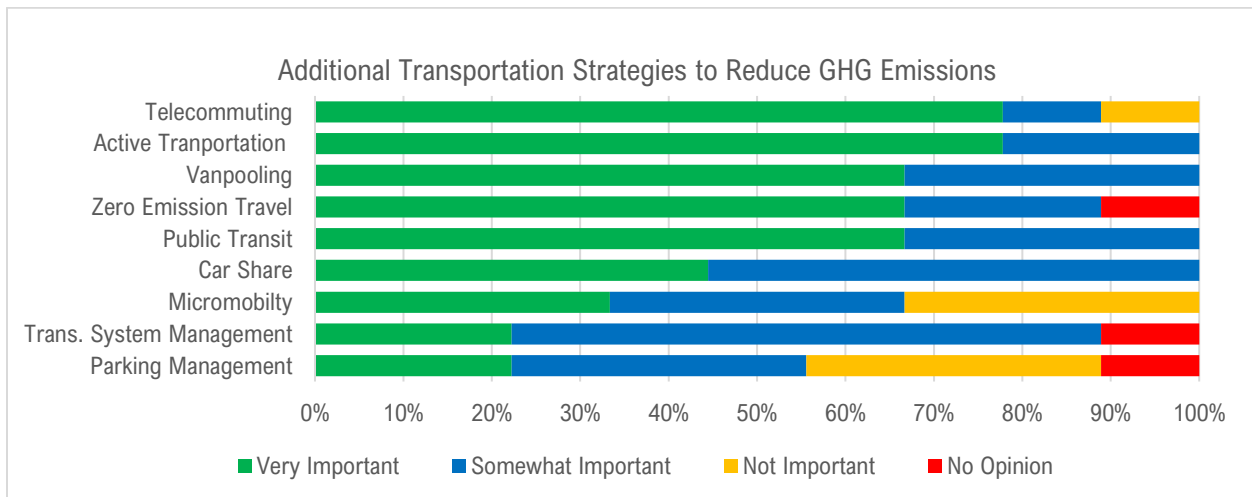
- Strategies to optimize the performance of existing infrastructure. Implementing multimodal and intermodal systems. Combining various technologies to improve the operating capabilities of the transportation system.

Van Pools

- Shared ride vanpool programs designed to get people to their place of employment whether close or far.

There was general interest in all the strategies, however community feedback indicated preferred options participants believed would be viable for helping meet the objectives of the RTP/SCS. A summary of interest in the strategies is shown in Figure 3-3.

Figure 3-3 Additional Transportation Strategies



Travel Factors

Off-Model GHG Reductions

The Madera County travel demand model is primarily used to project the behavior of vehicle travel. The behavior it outputs can be used to inform the EMFAC2014 model to then model emission factors produced because of modeled vehicle behavior. There are additional transportation strategies able to bare positive GHG impacts the travel demand model and EMFAC2014 model are not able to account for. The off-model strategies include:

- *San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 9410 eTRIP Program* – The eTRIP Rule (Rule 9410, Employer Based Trip Reduction), was adopted by the District Governing Board on December 17, 2009. The eTRIP Rule requires larger employers to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes.
- *Bike & Pedestrian Infrastructure Program* – In the 2022 RTP/SCS, Madera County plans an increase in bicycle lane mile of nearly 66% by 2035. The ability to access new bicycle facilities and entice modal shift away from vehicle travel is not captured in the Madera County Travel Demand Model.
- *Vanpooling* – CalVans is a major provider of vanpooling service in Madera County. Several vanpools currently provide service to the Chowchilla state prison complex. These vanpools are not included due to not double counting with Rule 9410 or counting state funded services. MCTC has worked with CalVans staff to project conservative private employer vanpool growth in the Madera region not captured by the Madera County Travel Demand Model.
- *Transit Enhancement* – Madera transit systems will expand service and routes to meet new demand in the future. The enhancement of existing or expansion of new services and the resulting ridership increases are not captured by the Madera County Travel Demand Model.
- *Bike Share* – A bike share program operated by the Madera Police Department was initiated in the City of Madera as part of the Esperanza Village development complete in 2022. Bike share strategy is not captured by the Madera County Travel Demand Model.

In reflecting on the public engagement feedback received regard additional or new transportation strategies for the region to pursue, the above listed off-model strategies are applied to the *Scenario 1 Continued Trends, Scenario 2 Moderate Shift and Scenario 3 Conservation and Mobility* RTP/SCS alternative. They well with the key objectives of the preferred RTP/SCS scenario, *Scenario 3 Conservation and Mobility: accelerate investment shift towards zero-emission vehicle infrastructure, public transit, shared ride options, micromobility, and non-motorized transportation strategies.*

Induced Demand

Induced demand analysis is required by CARB for SB 375 analysis of CO2 emissions. In order to reflect VMT resulting from new roadway capacity, additional calculation is required to augment results generated in the

travel demand modeling process for the RTP/SCS. The California Induced Travel Calculator developed by the National Center for Sustainable Transportation was utilized to calculate the impact of roadway capacity changes to roadway facilities with Federal Highway Administration (FHWA) functional classifications of 1, 2 or 3, the being interstate, freeways, and highways/major arterials.

Madera County has no FHWA class 1 facilities. Over the course of the plan there are several projects with changes to capacity on FHWA class 2 and 3 facilities. An elasticity of 0.75 is used for lane additions to class 2 or 3 facilities. Elasticity represents the increase in VMT from a given increase in roadway capacity. Induced demand research has indicated a 10% increase in roadway capacity is likely to increase network wide VMT by 6 to 10 percent equating to an elasticity of 0.6 to 1.0 with higher elasticity for expansions of major highways (interstates) than for capacity increases on other class 2 or 3 facilities.

The research the California Induced Travel Calculator is built from is not necessarily reflective of the Madera region in that much of it is derived from much larger, more urban metropolitan areas. However, the calculator applies an elasticity range from 0.75 to 1.0. The elasticity in Madera would not necessarily be this high based on the rural, low population and congestion nature of much of the region.

In the assessment of CO2 emissions for Sb 375, the California Induced Travel Calculator VMT data output because of changes to lane miles on class 2 and 3 facilities added to the travel demand model VMT total before emissions analysis using EMFAC2014 begin so CO2 assessment.

Scenarios Performance

Emissions Modeling

Upon completion of scenario modeling using the travel demand model, the modeled outputs are prepared for emissions analysis using the EMFAC2014 model developed by CARB. The results of the emissions modeling process indicate the potential progress the region may make if the RTP/SCS is effectively implemented. Table 3-3 shows the performance of the preferred scenario as it relates to meeting the GHG reduction targets.

Table 3-3 Scenario 3 Conservation and Mobility GHG Reduction from 2005 Levels

	Target	Result
Reduction in CO2 per capita from 2005 to 2020	10%	-18%
Reduction in CO2 per capita from 2005 to 2035	16%	-22%

Table 3-4 Shows how the scenarios perform in 2035 in GHG and VMT reduction.

Table 3-4 2035 Future VMT and GHG Reduction Per Capita

	Scenario 1	Scenario 2	Scenario 3
Reduction in CO2 per capita from 2005 to 2035	-21.60%	-22.05%	-22.12%
Reduction in VMT2 per capita from 2005 to 2035	-18.22%	-18.73%	-18.78%

Table 3-5 indicates a shift in modal activity away from single occupancy vehicles and towards other modes, especially for the preferred scenario.

Table 3-5 2035 and 2046 Modal Shift

	2020	2035	2046
Mode			
Drive alone	297,804	339,988	367,699
Two-person shared ride	128,958	150,052	164,429
Three-plus person shared ride	172,383	203,168	224,931
Transit	2,411	2,791	3,059
Walk	6,250	7,933	9,118
Bike	87,117	107,502	121,703
Home to work average trip distance (miles)	9.37	8.67	8.26
Home to work trip average time (minutes)	15.24	15.24	14.20
Mode Split			
Drive alone	42.9%	41.9%	41.3%
Two-person shared ride	18.6%	18.5%	18.5%
Three-plus person shared ride	24.8%	25.0%	25.2%
Transit	0.3%	0.3%	0.3%
Walk	0.9%	1.0%	1.0%
Bike	12.5%	13.2%	13.7%